SOIL SURVEY

Woodruff County Arkansas

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
ARKANSAS AGRICULTURAL EXPERIMENT STATION
Issued August 1968

Major fieldwork for this soil survey was done in the period 1956 through 1963. Soil names and descriptions were approved in 1966. Unless otherwise indicated statements in the publication refer to conditions in the county in 1963. This survey was made cooperatively by the Soil Conservation Service and the Arkansas Agricultural Experiment Station; it is part of the technical assistance furnished to the Woodruff County Soil and Water Conservation District.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms and woodlands; in selecting sites for roads, ponds, buildings, or other structures; and in appraising the value of tracts of land for agriculture, industry, or recreation.

Locating Soils

All of the soils of Woodruff County are shown on the detailed map at the back of this survey. This map consists of many sheets that are made from aerial photographs. Each sheet is numbered to correspond with numbers shown on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbol. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information in the survey. This guide lists all of the soils of the county by map symbol. It shows the page where each kind of soil is described and also the page for the capability unit, woodland group, and wildlife group.

Individual colored maps showing the relative suitability or limitations of soils for many specific purposes other than cultivated crops, woodland, and wildlife can be developed by using the soil map and information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils in the soil descriptions and in the sections "Management by Capability Units," "Use of the Soils for Woodland," and "Wildlife."

Foresters and others can refer to the section "Use of the Soils for Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers and sportsmen can find information of interest in the section "Wildlife."

Community planners and others concerned with suburban development can read about the soil properties that affect the choice of homesites, industrial sites, schools, and parks in the section "Nonfarm Uses of the Soils."

Engineers and builders can find under "Engineering Properties of the Soils" tables that give engineering descriptions of the soils in the county and that name soil features that affect engineering practices and structures.

Scientists and others can read about how the soils were formed and how they are classified in the section "Formation and Classification of the Soils."

Newcomers in Woodruff County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section "General Nature of the County," which gives additional information about the county.

Contents

Issued August 1968

SOIL SURVEY OF WOODRUFF COUNTY, ARKANSAS

SOILS SURVEYED BY GEORGE R. MAXWELL, JAMES V. CLARK, GEORGE R. DAHLKE, AND JAMES E. HOELSCHER, SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE ARKANSAS AGRICULTURAL EXPERIMENT STATION

WOODRUFF COUNTY is in the northeastern part of Arkansas (fig. 1). It is about 33 miles long and 24 miles wide and covers an area of 379,520 acres, or 593 square miles.

The soils of this county formed in alluvium and loess. About three-quarters of the acreage consists of level to undulating soils that formed in alluvium on the flood plains of the White River and its tributaries, the Cache River and Bayou DeView. The rest consists of level to gently rolling soils formed in loess on tablelands separated from the flood plains by long narrow escarpments.

Most of the soils contain moderate to large amounts of plant nutrients, and there is an abundant supply of ground water. The total rainfall is sufficient for most crops, but the distribution of rainfall throughout the year is generally not favorable for plants. In winter and spring drainage is needed on many soils, and in summer most crops benefit from irrigation because the amount of water available to plants is somewhat limited. The hazard of flooding by the White River has been reduced in recent years by the construction of levees and major dams upstream, but about 12 percent of the county is still subject to occasional flooding.

Cotton, rice, and soybeans are the principal crops. Small acreages of strawberries, watermelons, peaches, and winter small grains are grown. A few areas are in pasture.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soils are in Woodruff County, where they are located, and how they can be used. They went into the county knowing they likely would find many soils they had already seen and perhaps some they had not. As they traveled over the county, they observed steepness, length, and shape of slopes; size and speed of streams; kinds of native plants or crops; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by roots of plants.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. To use this publication efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, the major horizons of all the soils of one series are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Dubbs and Sharkey, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the natural, undisturbed landscape. Soils of one series can differ somewhat in texture of the surface soil and in slope, stoniness, or some other characteristic that affects use of the soils by man.

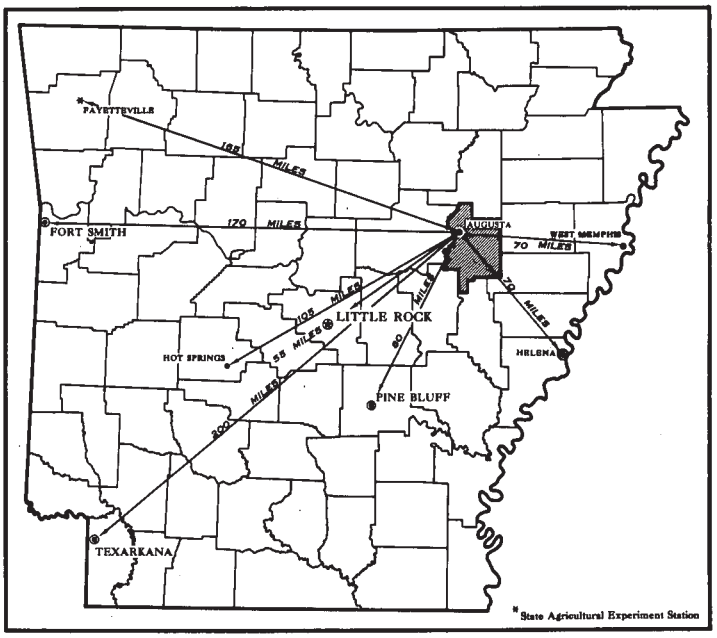

Figure 1.—Location of Woodruff County in Arkansas.

Many soil series contain soils that differ in the texture of their surface layer. According to such differences in texture, separations called soil types are made. Within a series, all the soils having a surface layer of the same texture belong to one soil type. Dubbs fine sandy loam and Dubbs silt loam are two soil types in the Dubbs series. The difference in the texture of their surface layers is apparent from their names.

Some types vary so much in slope, degree of erosion, number and size of stones, or some other feature affecting their use, that practical suggestions about their management could not be made if they were shown on the soil map as one unit. Such soil types are divided into phases. The name of a soil phase indicates a feature that affects management. For example, Dubbs silt loam, 0 to 1 percent slopes, is one of two phases of Dubbs silt loam, a soil type that has a slope range of 0 to 3 percent.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that greatly help in drawing boundaries accurately. The soil map in the back of this publication was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning management of farms and fields, a mapping unit is nearly equivalent to a soil type or a phase of a soil type. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil type or soil phase.

In preparing some detailed maps, the soil scientists have a problem of delineating areas where different kinds of soils are so intricately mixed, or occur in such small individual tracts, that it is not practical to show them separately on the map. They show such a mixture of soils as one mapping unit and call it a soil complex. Ordinarily, a soil complex is named for the major kinds of soil in it, for example, Grubbs-Foley complex. Another kind of mapping unit is the undifferentiated group, which consists of two or more soils that occur together without regularity in pattern or relative proportion. The individual tracts of the component soils could be shown separately on the map, but the differences are so slight that the separation is not important for the objectives of the survey. An example of an undifferentiated unit is Sharkey and Mhoon soils.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soils in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soils. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way that it is readily useful to different groups of readers, among them farmers, managers of woodland, engineers, and homeowners. Grouping soils that are similar in suitability for each specified use is the method of organization commonly used in the soil surveys. On the basis of the yield and practice tables and other data, the soil scientists set up trial groups. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others and then adjust them according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

The general soil map at the back of this publication shows, in color, the soil associations in Woodruff County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of farming or other land use. Such a map is not suitable for planning the management of a farm or field, because the soils in any one association ordinarily differ in slope, depth, texture, drainage, and other characteristics that affect management.

The nine soil associations in Woodruff County are described in this section. More detailed information about the individual soils in each association can be obtained by studying the detailed map and by reading the section "Descriptions of the Soils."

1. Sharkey-Bowdre association

Poorly drained to moderately well drained, level to gently undulating, clayey and loamy soils in slack-water areas

This association consists of broad flats and of narrow ridges that are separated by shallow depressions. The ridges rise 1 foot to 3 feet higher than the depressions. Most of this association is along the White River. The total area is about 19 percent of the county.

Sharkey soils make up about 80 percent of the association, Bowdre soils about 10 percent, and other soils, mainly Mhoon, Commerce, and Robinsonville, the remaining 10 percent.

Sharkey soils are poorly drained. They have a surface layer of dark-gray to very dark grayish-brown silty clay loam or clay. The subsoil is dark-gray or gray, mottled silty clay or clay. Bowdre soils are moderately well drained. Their surface layer is very dark grayish-brown to dark-brown silty clay loam. The subsoil is very dark grayish-brown, mottled loam, silt loam, sandy loam, or silty clay loam.

This association is one of the major areas in the county for the production of soybeans. The soils are suited to farming, and about 75 percent of the acreage is cultivated. Some areas are flooded occasionally, however, and most areas need surface drainage. Farms average 1,000 acres in size, and most are highly mechanized. About half are operated by owners, and the rest by renters. The main crop is soybeans, but cotton, rice, small grain, and pasture crops are also grown.

Because of poor drainage and instability, the dominant soils of this association are not considered good sites for residences, other structures, or highways.

2. *Bosket-Beulah-Bruno association*

Well-drained to excessively drained, level to undulating, loamy and sandy soils on natural levees

This association is on old natural levees along bayous, oxbow lakes, and abandoned stream channels. It consists of long, narrow ridges separated by shallow depressions. The ridges are 1 foot to 8 feet higher than the depressions. This association is north of Augusta. The total area is about 5 percent of the county.

Bosket soils make up about 50 percent of the association, Beulah soils about 20 percent, Bruno soils about 20 percent, and Dubbs soils the remaining 10 percent.

Bosket soils are well drained. Their surface layer is dark-brown fine sandy loam, and the subsoil is brown sandy clay loam. Beulah soils are somewhat excessively drained. They have a surface layer of brown sandy loam and a subsoil of brown to dark yellowish-brown fine sandy loam. Bruno soils are excessively drained. Their surface layer is dark grayish-brown loamy fine sand or loamy sand. The subsoil is brown, dark-brown, or yellowish-brown loamy fine sand.

This is one of the major associations in the county for the production of watermelons and small grain. Because of the low available water capacity and the hazard of wind erosion in spring, some of the soils are less well suited to intensive farming than the soils in adjacent associations. Nevertheless, more than 95 percent of the acreage is cultivated. Farms average about 160 acres in size, and most are highly mechanized. About half are operated by owners, and the rest by renters. Watermelons and strawberries are commonly grown as truck crops. There are large acreages of soybeans, small grain, and cotton.

The dominant soils in this association are considered fairly good sites for residences and light industry and good sites for highways.

3. *Bosket-Dundee-Dubbs association*

Well-drained to somewhat poorly drained, level to undulating, loamy soils on natural levees

This association is on natural levees along bayous, oxbow lakes, and abandoned stream channels. It consists of broad plains and long, narrow ridges separated by narrow, shallow depressions. The ridges are 1 foot to 8 feet higher than the depressions. The total area is about 30 percent of the county.

Bosket soils make up about 35 percent of this association, Dundee soils about 15 percent, and Dubbs soils about 10 percent. The remaining 40 percent is made up of Beulah, Bruno, Foley, Amagon, Sharkey, and Tuckerman soils.

Bosket soils are well drained. They have a surface layer of dark-brown fine sandy loam and a subsoil of brown sandy clay loam. Dundee soils are somewhat poorly drained. Their surface layer is very dark grayish-brown to brown fine sandy loam or silt loam. The subsoil is grayish-brown, mottled sandy clay loam or silty clay loam. Dubbs soils are well drained to moderately well drained. They have a surface layer of brown to dark grayish-brown fine sandy loam or silt loam. The subsoil is dark-brown to yellowish-brown clay loam or silty clay loam.

This association is one of the major areas in the county for the production of cotton and soybeans. The soils are well suited to intensive farming. More than 95 percent of the acreage is cultivated. Farms average about 160 acres in size, and most are highly mechanized. About half are operated by the owner, and the rest by renters. The main crops are cotton and soybeans, but watermelons, strawberries, small grain, and rice are also grown.

The dominant soils in this association are considered good sites for residences, light industry, and highways.

4. *Dundee-Amagon-Foley association*

Somewhat poorly drained to poorly drained, level to nearly level, loamy soils on bottom lands

This association is in level to nearly level areas along streams, abandoned channels, and depressions. It is along the west side of Bayou DeView. The total area is about 6 percent of the county.

Dundee soils make up about 35 percent of this association, Amagon soils about 30 percent, Foley soils about 20 percent, and Dubbs, Lafe, McCrory, Grubbs, and Tuckerman soils the remaining 15 percent.

Dundee soils are somewhat poorly drained. They have a surface layer of very dark grayish-brown to brown fine sandy loam or silt loam. Their subsoil is grayish-brown, mottled sandy clay loam or silty clay loam. Amagon soils are poorly drained. They have a surface layer of dark grayish-brown silt loam and a subsoil of gray, sticky silt loam or silty clay loam. Foley soils are poorly drained to somewhat poorly drained. Their surface layer is grayish-brown to dark grayish-brown silt loam. The subsoil is grayish-brown to gray silt loam over silty clay loam that contains a large amount of sodium.

The soils of this association are moderately well suited to farming, but most areas need surface drainage. More than 90 percent of the acreage is cultivated, and most of it is irrigated. Hardwood trees grow in small, odd-shaped woodlots. Farms average about 160 acres in size, and most of them are highly mechanized. About three-fourths are operated by renters. Cotton, soybeans, and rice are the main crops, but small amounts of small grain and pasture crops are also grown.

The major soils are not considered good sites for residences, industry, or highways. The compact subsoil and the high water table cause some problems with septic-tank drainage fields.

5. *Amagon-Foley association*

Poorly drained to somewhat poorly drained, level, loamy soils in depressions and old filled stream channels

This association is in level areas along streams, abandoned channels, and depressions. Most of it is west of Bayou DeView. The total acreage is about 10 percent of the county.

Amagon soils make up about 50 percent of this association, Foley soils about 45 percent, and Zachary, Mhoon, McCrory, Grubbs, and Tuckerman soils the remaining 5 percent.

Amagon soils are poorly drained. They have a surface layer of dark grayish-brown silt loam and a subsoil of

gray, sticky silt loam or silty clay loam. Foley soils are poorly drained to somewhat poorly drained. They have a surface layer of dark-brown to dark grayish-brown silt loam and a subsoil of grayish-brown to gray silt loam over silty clay loam that contains a large amount of sodium.

The soils in this association are moderately well suited to farming. About 75 percent of the acreage is cultivated, and most of it is irrigated. The rest is woodland. Some areas are flooded occasionally, and most areas need surface drainage. Crop yields in most areas are low, unless artificial drainage is provided. Farms average about 160 acres in size, and most are highly mechanized. About three-fourths of the farms are operated by renters. The main crops are rice and soybeans; cotton is grown in some areas.

The dominant soils in this association are considered poor sites for residences, industry, and highways. The high water table causes problems with septic-tank drainage fields.

6. *Alligator association*

Poorly drained, level to nearly level, clayey soils in slack-water areas

This association consists of broad, level to nearly level slack-water areas on high bottom lands above the present flood plains. It is along and near Bayou DeView and occupies about 8 percent of the county.

Alligator soils make up about 70 percent of this association, and Amagon, Dundee, and Grubbs soil make up the remaining 30 percent. Alligator soils are poorly drained. They have a surface layer of very dark grayish-brown to grayish-brown silty clay loam or silt loam and an underlying layer of olive-gray to grayish-brown, mottled clay.

This is one of the major associations in the county for the production of soybeans and rice. These soils are suited to farming, but most areas need surface drainage. More than 80 percent of the acreage is cultivated, and most of it is irrigated. The rest of the acreage is in hardwood trees. Farms average about 320 acres in size, and most are highly mechanized. About half are operated by owners, and the rest are under rental agreements. The main crops are rice and soybeans, but cotton, small grain, and pasture crops are also grown.

Because they are unstable for foundations, the major soils of this association are considered poor sites for residences, industry, or highways.

7. *Calloway-Calhoun-Grenada association*

Poorly drained to moderately well drained, level to sloping soils that formed in windblown silts on flats and low ridges

This association is on broad flats separated by long, narrow, gently sloping ridges that rise 3 to 8 feet higher than the flats. Slow-flowing intermittent streams drain the flats. This association is between Bayou DeView and the Cache River in the Nubbin Ridge area, which is near the center of the county. The total area is about 5 percent of the county.

Calloway soils, which are on the higher parts of the flats, make up about 50 percent of the association; Calhoun soils, on the lower parts, make up 20 percent; Grenada soils, on the ridges, make up about 20 percent. Henry, Crowley, Hillemann, and Zachary soils make up the remaining 10 percent.

The major soils have a surface layer of silt loam and a compact subsoil of silt loam or silty clay loam. Calloway soils are somewhat poorly drained. They have a very dark grayish-brown to brown surface layer and a yellowish-brown, brown, and gray, mottled subsoil. A fragipan occurs at a depth of 15 to 22 inches. Calhoun soils are poorly drained. They have a light-gray to dark-gray surface layer and a dark-gray to grayish-brown, compact subsoil. Grenada soils are moderately well drained. They have a brown to dark grayish-brown or yellowish-brown surface layer and a yellowish-brown or brown, mottled subsoil. A fragipan occurs at a depth of about 20 inches.

The soils in this association are well suited to farming, but all except Grenada soils need surface drainage. About 85 percent of the acreage is cultivated, 5 percent is pastured, and the rest is wooded. Farms average about 80 acres in size. Most are operated by owners, but some are farmed by renters. Cotton and soybeans are the main crops. Rice, peaches, and pasture crops are also grown.

Calhoun soils are considered poor sites for residences and highways. Grenada and Calloway soils are considered fairly good sites for residences and highways but are poor sites for the operation of septic-tank drainage fields.

8. *Crowley-Hillemann association*

Poorly drained to somewhat poorly drained, level to nearly level soils that formed in windblown silts on flats and low ridges

This association consists of broad flats and narrow ridges that rise 1 foot to 2 feet higher than the flats. Slow-flowing intermittent streams drain the flats. Most of this association is in the southeastern part of the county. The total area is about 5 percent of the county.

Crowley and Hillemann soils, together, make up about 65 percent of this association, and Henry, Calloway, and Grenada soils about 35 percent.

Crowley soils are poorly drained. They have a surface layer of dark grayish-brown silt loam and a subsoil of gray, mottled silty clay or silty clay loam. The subsoil is underlain by gray or grayish-brown, mottled silt loam or silty clay loam. Hillemann soils are somewhat poorly drained. They have a surface layer of dark grayish-brown to brown silt loam. The upper part of the subsoil is red, mottled silty clay loam, and the lower part is mottled silt loam or silty clay loam and contains a large amount of sodium.

This association is within the major rice-producing area of the county. The soils are well suited to farming, but most areas need surface drainage. More than 95 percent of the acreage is cultivated, and most of it is irrigated. Farms average about 640 acres in size, and most are highly mechanized. Most farms are operated by owners, but a few are farmed by renters. Rice and soybeans are the main crops; cotton, small grain, and lespedeza are also grown.

These soils are considered fairly good sites for residences and highways. Their compact clayey layer, however, causes some problems with septic-tank drainage.

9. *Calhoun-Calloway-Henry association*

Poorly drained to somewhat poorly drained, level to nearly level soils that formed in windblown silts on broad flats

This association consists of broad flats separated by a few long, low ridges as much as a fourth of a mile wide.

The ridges are commonly not more than a foot higher than the flats, although some are as much as 3 feet higher. Slow-flowing intermittent streams drain the flats. This association is east of Bayou DeView and occupies about 12 percent of the county.

Calhoun soils are on the lower parts of the flats and make up about 35 percent of the association; Calloway soils, on the higher parts, make up about 20 percent; and Henry soils, on the lower parts and in the depressions, make up about 20 percent. The remaining 25 percent is made up of Zachary, Crowley, Hillemann, and Grenada soils.

The major soils have a surface layer of silt loam and a compact, brittle subsoil of silt loam or silty clay loam. Calhoun soils are poorly drained. They have a light-gray to dark-gray surface layer and a dark-gray to grayish-brown, compact subsoil. Calloway soils are somewhat poorly drained. They have a very dark grayish-brown to brown surface layer and a yellowish-brown, brown, and gray, mottled subsoil. A fragipan occurs in them at a depth of 15 to 22 inches. Henry soils are poorly drained. They have a gray to dark grayish-brown surface layer and a gray, mottled subsoil. A fragipan occurs at a depth of 28 to 40 inches.

The soils in this association are fairly well suited to farming. About 85 percent of their acreage is cultivated, 5 percent is pastured, and 10 percent is wooded. Most areas need surface drainage, and most of the cultivated acreage is irrigated. Farms average about 320 acres in size. Most are operated by owners, but some are farmed by renters. Rice and soybeans are the main crops; cotton and pasture crops are grown in some areas.

Calhoun and Henry soils are considered poor sites for residences and highways, but Calloway soils are considered fairly good sites, though their compact subsoil and the high water table cause some problems with septic-tank drainage.

Descriptions of the Soils

In this section the soils of Woodruff County are described in detail. The procedure is to describe first the soil series and then the mapping units in that series. Thus, to get full information on any one mapping unit, it is necessary to read both the description of that unit and the description of the soil series to which the unit belongs.

The description of the soil series includes a description of a profile that is considered representative of all the soils of the series. If the profile of a given mapping unit differs from this typical profile, the differences are stated in the description of the mapping unit, unless they are apparent from the name of the mapping unit. Many of the terms used in describing soil series and mapping units are defined in the Glossary, and some are defined in the section "How This Survey Was Made."

The approximate acreage and proportionate extent of the soils are shown in table 1. At the back of this soil survey is the "Guide to Mapping Units," which lists the mapping units in the county and shows the capability unit, woodland group, and wildlife group each mapping unit is in and the page where each of these groups is described.

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soil	Area	Extent	Soil	Area	Extent
	Acres	*Percent*		*Acres*	*Percent*
Alligator silt loam, 0 to 1 percent slopes	16, 280	4. 3	Dundee fine sandy loam, gently undulating	4, 263	1. 1
Alligator silt loam, 1 to 3 percent slopes	791	. 2	Dundee silt loam, 0 to 1 percent slopes	8, 481	2. 2
Alligator silty clay loam, 0 to 1 percent slopes	5, 091	1. 3	Dundee silt loam, gently undulating	2, 028	. 5
Amagon silt loam	16, 724	4. 4	Forestdale silty clay loam	3, 035	. 8
Amagon-Grubbs silt loams	13, 888	3. 7	Grenada silt loam, 1 to 3 percent slopes	1, 730	. 5
Beulah and Bruno sandy loams, gently undulating	1, 847	. 5	Grenada silt loam, 3 to 8 percent slopes	1, 607	. 4
Beulah and Bruno sandy loams, undulating	2, 962	. 8	Grenada silt loam, 3 to 8 percent slopes, eroded	2, 466	. 6
Bosket fine sandy loam, 0 to 1 percent slopes	15, 961	4. 2	Grubbs silt loam, 0 to 1 percent slopes	2, 132	. 6
Bosket fine sandy loam, 3 to 8 percent slopes	3, 397	. 9	Grubbs silt loam, 1 to 3 percent slopes	489	. 1
Bosket fine sandy loam, gently undulating	14, 510	3. 8	Grubbs-Foley complex	22, 324	5. 9
Bowdre silty clay loam, 0 to 1 percent slopes	3, 440	. 9	Henry silt loam	10, 053	2. 6
Bowdre silty clay loam, gently undulating	3, 682	1. 0	Lafe-Foley silt loams	350	. 1
Bruno loamy fine sand, gently undulating	1, 285	. 3	McCrory complex	15, 869	4. 2
Bruno loamy fine sand, undulating	1, 374	. 4	Mhoon fine sandy loam	12, 795	3. 4
Calhoun silt loam	19, 211	5. 1	Mhoon sandy clay loam	1, 789	. 5
Calloway silt loam, 0 to 1 percent slopes	14, 064	3. 7	Patterson loamy fine sand, 0 to 1 percent slopes	1, 774	. 5
Calloway silt loam, 1 to 3 percent slopes	4, 388	1. 2	Patterson loamy fine sand, gently undulating	446	. 1
Commerce fine sandy loam, gently undulating	1, 768	. 5	Robinsonville fine sandy loam	620	. 2
Commerce silt loam, gently undulating	1, 394	. 4	Sharkey clay, 0 to 1 percent slopes	12, 661	3. 3
Crowley and Hillemann silt loams, 0 to 1 percent slopes	11, 522	3. 0	Sharkey clay, gently undulating	7, 150	1. 9
Crowley and Hillemann silt loams, 1 to 3 percent slopes	966	. 2	Sharkey silty clay loam, 0 to 1 percent slopes	18, 261	4. 8
Dubbs fine sandy loam, 0 to 1 percent slopes	2, 274	. 6	Sharkey silty clay loam, gently undulating	29, 828	7. 9
Dubbs fine sandy loam, gently undulating	942	. 2	Sharkey and Mhoon soils	2, 222	. 6
Dubbs silt loam, 0 to 1 percent slopes	5, 664	1. 5	Tuckerman fine sandy loam	20, 866	5. 5
Dubbs silt loam, 1 to 3 percent slopes	1, 149	. 3	Zachary silt loam	7, 839	2. 1
Dundee fine sandy loam, 0 to 1 percent slopes	11, 309	3. 0	Zachary silty clay loam	3, 934	1. 0
Dundee fine sandy loam, 1 to 3 percent slopes	1, 806	. 5	Water	6, 819	1. 8
			Total	379, 520	100. 0

Alligator Series

The Alligator series consists of very dark grayish-brown to grayish-brown, poorly drained soils on second and third terraces. These soils are very slowly permeable. They formed in thick beds of clay that were once the flood plains of major rivers. The slope range is 0 to 3 percent.

Alligator soils are associated with Amagon, Foley, Dundee, and Grubbs soils. They are finer textured than Amagon, Dundee, and Foley soils and are grayer and more poorly drained than Dundee soils. They are more poorly drained than Grubbs soils, and they lack the B horizon and the large amount of sodium that the Grubbs soils have.

Representative profile of Alligator silty clay loam, 0 to 1 percent slopes, in a moist cultivated field in the NE¼NW¼NE¼ sec. 8, T. 8 N., R. 1 W.:

Ap—0 to 4 inches, very dark grayish-brown (10YR 3/2) silty clay loam; moderate, very fine, subangular blocky structure; friable when moist, slightly sticky when wet; common fine roots; few, fine, soft, black concretions; medium acid; abrupt, wavy boundary.

ACg—4 to 10 inches, gray (10YR 5/1) light silty clay; common, medium, prominent mottles of strong brown; massive in place but breaks to coarse subangular blocky clods; firm when moist, plastic and slightly sticky when wet; many fine roots; common fine pores; common, fine and medium, soft, black concretions; strongly acid; clear, wavy boundary.

C1g—10 to 17 inches, grayish-brown (2.5Y 5/2) silty clay; many, fine, prominent mottles of yellowish red and strong brown; massive in place but breaks to moderate, fine and medium, subangular blocky fragments when partly dry; sticky and very plastic; common fine roots; common slickensides in lower part; few fine concretions; very strongly acid; diffuse boundary.

C2g—17 to 28 inches, grayish-brown (2.5Y 5/2) silty clay; few, medium, prominent mottles of yellowish red; massive in place but breaks to moderate, medium, subangular blocky fragments when partly dry; sticky and very plastic; few fine roots; many, coarse, intersecting slickensides; few fine concretions; very strongly acid; diffuse boundary.

C3g—28 to 41 inches, grayish-brown (2.5Y 5/2) silty clay; few, medium, prominent mottles of yellowish red; common, coarse, tubular, greenish-gray (5GY 5/1) reticulations ½ inch to 2 inches in diameter; massive in place but breaks to moderate, medium, subangular blocky fragments when partly dry; sticky and very plastic; few fine and coarse roots; many coarse intersecting slickensides; few fine and medium concretions; very strongly acid; gradual, wavy boundary.

C4g—41 to 52 inches, grayish-brown (2.5Y 5/2) silty clay; common slickensides; thin, prominent, yellowish-red (5YR 4/6) films 2 to 4 inches across on faces of slickensides; few, greenish-gray, tubular reticulations ¼ to 1 inch in diameter; weak, coarse, subangular blocky fragments that are acutely angular at intersections with slickensides; sticky and very plastic; few fine roots; few, fine, brown concretions; strongly acid.

The A horizon ranges from 3 to 9 inches in thickness, from very dark grayish brown (10YR 3/2) to light gray (10YR 7/1) in color, and from medium acid to strongly acid in reaction. It is silt loam or silty clay loam in texture. The ACg horizon is absent from some profiles. The Cg horizon ranges from grayish brown (2.5Y 5/2) to olive gray (5Y 5/2) in color and from strongly acid to very strongly acid in reaction. The texture is silty clay or clay.

Alligator silt loam, 0 to 1 percent slopes (AaA).—This soil has a very dark grayish-brown or dark grayish-brown surface layer that ranges from 4 to 9 inches in thickness but is commonly about 7 inches thick. The upper part of the subsoil is olive-gray, plastic silty clay or clay, and the lower part is olive-gray, very plastic silty clay or clay mottled with yellowish brown. A few small areas of Grubbs soils and Alligator silty clay loam were included in mapping.

This soil is strongly acid to very strongly acid. It has moderate natural fertility and moderate available water capacity. The surface layer is readily permeable to roots and water, but the subsoil restricts the growth of roots and the movement of water. Runoff is slow to ponded, and wetness is a severe hazard.

The main crops grown on this soil are rice and soybeans. Cotton is grown in some small areas. The surface layer is easy to till and can be worked throughout a wide range of moisture content. Farming operations generally have to be delayed unless surface drains are provided. The response to lime and fertilizer is good. (Capability unit IIIw–1; woodland group 4; wildlife group 4)

Alligator silt loam, 1 to 3 percent slopes (AaB).—This soil occurs in narrow bands on the slopes between terraces and bottom lands. The surface layer is brown or grayish-brown to very dark grayish-brown, friable silt loam. It ranges from 4 to 9 inches in thickness but is commonly about 6 inches thick. The upper part of the underlying material is olive-gray to grayish-brown, plastic silty clay or clay, and the lower part is olive-gray, very plastic silty clay or clay mottled with yellowish brown. A few small areas of Grubbs soils and Alligator silty clay loam were included in mapping.

This soil is strongly acid or very strongly acid and moderate in natural fertility. Runoff is slow, and wetness is a severe hazard. The available water capacity is moderate. The surface layer is readily permeable to roots and moisture, but the subsoil retards the growth of roots and the movement of water. The hazard of erosion is slight.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to lime and fertilizer is good. The main crops are soybeans and rice. (Capability unit IIIw–1; woodland group 4; wildlife group 4)

Alligator silty clay loam, 0 to 1 percent slopes (AcA).—This soil is on the high parts of bottom lands. It has a surface layer of dark-gray, dark grayish-brown, or brown, friable silty clay loam 3 to 7 inches thick. The underlying material is grayish-brown or olive-gray silty clay or clay 4 to more than 7 feet thick. This clayey material is extremely firm when moist and very sticky and very plastic when wet. A few small areas of Alligator silt loam and of Grubbs and Amagon soils were included in mapping.

This soil is strongly acid or very strongly acid and high in natural fertility. It is slowly permeable to roots and moisture. Runoff is slow to ponded, and the available water capacity is moderate.

Nearly all of this soil has been cleared. It is difficult to till and can be tilled efficiently only within a narrow range of moisture content. Farming operations usually have to be delayed unless drainage has been provided. The response to lime and fertilizer is good. Rice and soybeans are the main crops; cotton is grown in some areas. (Capability unit IIIw–1; woodland group 4; wildlife group 4)

Amagon Series

The Amagon series consists of dark grayish-brown to gray, poorly drained, slowly permeable soils in former

stream channels and in depressions on natural levees. These soils formed in silty alluvium. The slope range is 0 to 1 percent.

Amagon soils are associated with Dubbs, Dundee, Tuckerman, and Grubbs soils. They are grayer and more poorly drained than Dubbs and Dundee soils. They are siltier than Tuckerman soils. Amagon soils have a coarser textured B horizon than Grubbs soils and are strongly acid throughout the profile instead of being acid in the upper part and alkaline in the lower part. They lack the concentrations of sodium and magnesium that are characteristic of Grubbs soils.

Representative profile of Amagon silt loam, in a moist idle field in the SW¼NE¼NE¼ sec. 14, T. 8 N., R. 3 W.:

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) silt loam; moderate, medium, granular structure; very friable; numerous roots; many worm casts; strongly acid; clear, smooth boundary.

A1g—7 to 11 inches, grayish-brown (10YR 5/2) silt loam; common streaks and mottles of gray (10YR 6/1) and few streaks and mottles of brown (10YR 4/3) in the lower part; weak, medium, subangular blocky structure; very friable; many roots; many pores; strongly acid; clear, wavy boundary.

A2g—11 to 16 inches, gray (10YR 6/1) silt loam; common, medium, distinct mottles of pale brown and common, fine, faint mottles of yellowish brown; weak, medium, subangular blocky structure; friable; few roots; many coarse and medium pores; few, medium to coarse, hard, dark-colored concretions; strongly acid; clear, wavy boundary.

B1g—16 to 28 inches, gray (10YR 5/1) heavy silt loam; common, medium, distinct mottles of brown, pale brown, and yellowish brown; weak, medium, subangular blocky structure; very friable; many medium and coarse pores; common, medium, hard, dark-colored concretions; strongly acid; clear, wavy boundary.

B21tg—28 to 40 inches, gray (10YR 6/1) light silty clay loam; common, medium, distinct mottles of yellowish brown and dark brown; moderate, medium, subangular blocky and angular blocky structure; firm when moist, slightly plastic when wet; common pores; common, patchy clay films; many, hard, dark-colored concretions; strongly acid; clear, smooth boundary.

B22tg—40 to 46 inches, grayish-brown (2.5Y 5/2) silty clay loam; common, medium, distinct mottles of dark brown; moderate, medium, angular blocky structure; very firm when moist, slightly plastic when wet; many medium pores; common, patchy clay films; peds coated with gray silt; strongly acid; clear, smooth boundary.

C—46 to 52 inches +, dark grayish-brown (10YR 4/2) loam; common, medium, distinct mottles of grayish brown; weak, medium, subangular blocky structure; firm; common pores; strongly acid.

The A horizon ranges from dark grayish brown (10YR 4/2) to gray (10YR 5/1) in color and from 7 to 16 inches in thickness. Its texture is silt loam. The A1g and A2g horizons are lacking from some profiles, and the Ap horizon overlies the B horizon. The B1g horizon is grayish-brown (10YR 5/2) or gray (10YR 5/1) heavy silt loam to silty clay loam. The B2tg horizon is gray (10YR 5/1) to grayish-brown (10YR 5/2) heavy silt loam to silty clay loam mottled with yellow and brown. The depth to the C horizon ranges from 30 to 50 inches. Reaction is strongly acid to very strongly acid throughout the profile.

Amagon silt loam (0 to 1 percent slopes) (Am).—Nearly all of this soil occurs as narrow bands in depressions and old filled stream channels, where there is a moderate hazard of flooding. This soil has a 7-inch surface layer of dark grayish-brown silt loam and a subsoil of gray, mottled, sticky silt loam or silty clay loam. Below this, at a depth of 36 to 48 inches, is gray, mottled silt loam or loam. A few small spots of Foley, Grubbs, and Dundee soils were included in mapping.

This soil is strongly acid. It is moderate in natural fertility. Runoff is slow, and wetness is a severe hazard. The surface layer is readily permeable to roots and moisture, but the subsoil retards the growth of roots and the movement of water. The available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Farming operations commonly have to be delayed, unless surface drainage has been provided. The response to lime and fertilizer is good if the soil has been drained. The main crops are cotton and soybeans. Rice is grown in some areas. (Capability unit IIIw–2; woodland group 8; wildlife group 3)

Amagon-Grubbs silt loams (0 to 1 percent slopes) (Ar).—These soils are in depressions and old filled stream channels. They are so intermingled that it was not practical to map them separately. Amagon silt loam is dominant; Grubbs silt loam makes up 20 to 30 percent of a given area. A few small areas of Tuckerman, Foley, and Dundee soils were included in mapping.

Amagon silt loam has a dark grayish-brown surface layer and a subsoil of gray, mottled, sticky silt loam or silty clay loam. Below this is gray, mottled silt loam or loam. A profile of Grubbs silt loam is described in detail under the heading "Grubbs Series."

Runoff is slow, and wetness is a severe hazard. The surface layer is readily permeable to roots and moisture, but the subsoil retards the growth of roots and the movement of water. The available water capacity is moderate to low. Fertility is moderate to low. The Amagon soil is strongly acid throughout. The surface layer and the upper part of the subsoil in the Grubbs soil are strongly acid, but the lower part of the subsoil is alkaline and contains a large amount of sodium.

These soils are easy to till and can be worked throughout a wide range of moisture content. Farming operations commonly have to be delayed, unless surface drains have been provided. The response to fertilization and other management practices is moderate. If land leveling is necessary, the depth to the concentration of sodium in the Grubbs soil should be determined before cuts are made. The main crops are rice and soybeans. Cotton and grain sorghum are grown in some areas. (Capability unit IIIw–2; wildlife group 3; Amagon soil is in woodland group 8, Grubbs soil is in woodland group 11)

Beulah Series

The Beulah series consists of brown to dark-brown, somewhat excessively drained, loamy soils on natural levees. These soils formed in sandy sediments deposited by major streams. The slope range is 0 to 8 percent.

Beulah soils are adjacent to Dubbs, Bosket, and Bruno soils. They are less sandy in the subsoil than Bruno soils. They are sandier in the subsoil than Bosket and Dubbs soils.

The Beulah soils in Woodruff County are mapped only as part of two undifferentiated groups with Bruno soils.

Profile of Beulah fine sandy loam, 0 to 3 percent slopes, undulating, in a moist cultivated field in the NE¼NE¼NE¼ sec. 3, T. 8 N., R. 3 W.:

Ap—0 to 8 inches, dark-brown (7.5YR 4/4) fine sandy loam; structureless; very friable; common roots; slightly acid; abrupt, smooth boundary.

A21—8 to 20 inches, dark-brown (7.5YR 4/4) fine sandy loam; massive; friable; few roots; medium acid; clear, smooth boundary.
A22—20 to 46 inches, brown (7.5YR 5/4) fine sandy loam; massive; very friable; few roots; medium acid; clear, smooth boundary.
B—46 to 52 inches +, dark-brown (7.5YR 4/4) fine sandy loam; weak, medium, subangular blocky structure; firm; few dark-colored stains on some peds; few, soft, dark-colored concretions; medium acid.

The A horizon is brown (10YR 4/3) to dark brown (7.5YR 4/4) and is strongly acid to slightly acid. Some profiles have a 10- to 20-inch B1 horizon of brown (10YR 4/3) to dark yellowish-brown (10YR 4/4) fine sandy loam that is weak subangular blocky in structure and medium acid to strongly acid in reaction. In most places the B horizon is at a depth of 36 to 48 inches. It is brown (10YR 4/3) to dark-brown (7.5YR 4/4) fine sandy loam to light sandy clay loam and is medium acid to strongly acid.

Beulah and Bruno sandy loams, gently undulating (0 to 3 percent slopes) (BbU).—The Beulah soil in this undifferentiated group is somewhat excessively drained, and the Bruno soil is excessively drained. Small areas of Bosket and Dubbs soils were included in mapping.

The Beulah soil has a surface layer of dark-brown to brown fine sandy loam or sandy loam and a subsoil of dark-brown, brown, or dark yellowish-brown fine sandy loam or sandy loam. The Bruno soil has a profile similar to that described in detail under the heading "Bruno Series," except that the surface layer of this soil is sandy loam.

These soils are slightly acid to strongly acid. They are low to moderate in natural fertility. They are readily permeable to roots and moisture. Runoff is slow, and the available water capacity is moderately low to low.

These soils are easy to till and can be worked throughout a wide range of moisture content. The response to lime and fertilizer is moderate to good. The main crops are soybeans, cotton, and small grain. Strawberries and other truck crops are grown in some areas. Watermelons are well suited. (Beulah soil is in capability unit IIe–1, woodland group 6, and wildlife group 1; Bruno soil is in capability unit IIIs–1, woodland group 6, and wildlife group 1)

Beulah and Bruno sandy loams, undulating (0 to 8 percent slopes) (BbC).—The Beulah soil in this undifferentiated group is somewhat excessively drained, and the Bruno soil is excessively drained. Small areas of Bosket and Dubbs soils were included in mapping.

The Beulah soil has a surface layer of dark-brown to brown fine sandy loam or sandy loam and a subsoil of dark-brown, brown, or dark yellowish-brown fine sandy loam or sandy loam. The Bruno soil has a profile similar to the one described in detail under the heading "Bruno Series," except that the surface layer of this soil is sandy loam.

These soils are slightly acid to strongly acid and low to moderate in natural fertility. They are readily permeable to roots and moisture. Runoff is slow, and the available water capacity is moderately low to low.

These soils are easy to till and can be worked throughout a wide range of moisture content. The response to lime and fertilizer is moderate to good. The main crops are soybeans and small grain. Cotton, pasture crops, and strawberries and other truck crops are grown in some areas. Watermelons are well suited. (Beulah soil is in capability unit IIIe–1, woodland group 6, and wildlife group 1; Bruno soil is in capability unit IIIs–1, woodland group 6, and wildlife group 1)

Bosket Series

The Bosket series consists of dark-brown, well-drained, permeable, loamy soils on natural levees along bayous and the former channels of major rivers. These soils formed in stratified beds of loamy sediments.

Bosket soils are associated with Dubbs, Dundee, Bruno, and Beulah soils. They are coarser textured than Dubbs soils. They are better drained than Dundee soils, and they lack mottles. Bosket soils are finer textured and more slowly permeable than Bruno and Beulah soils, and they have a better defined B horizon.

Representative profile of Bosket fine sandy loam, 0 to 1 percent slopes, in a moist cultivated field in the SW¼ SW¼SE¼ sec. 17, T. 8 N., R. 3 W.:

Ap—0 to 7 inches, dark-brown (7.5YR 3/2) fine sandy loam; structureless; loose; many roots; medium acid; abrupt, smooth boundary.
A3—7 to 18 inches, dark yellowish-brown (10YR 3/4) fine sandy loam: weak, medium, subangular blocky structure; very friable; common roots; medium acid; gradual, wavy boundary.
B21t—18 to 24 inches, brown (10YR 4/3) sandy clay loam; weak, medium, subangular blocky structure; firm; common roots; few patchy clay films; strongly acid; clear, wavy boundary.
B22t—24 to 32 inches, dark yellowish-brown (10YR 4/4) sandy clay loam; moderate, medium, subangular blocky structure; firm; common roots; common pores; common patchy clay films; few dark-colored stains on some peds; strongly acid; gradual, wavy boundary.
C—32 to 52 inches +, dark yellowish-brown (10YR 4/4) fine sandy loam; massive; very friable; few roots; few pores; strongly acid.

The A horizon ranges from very dark grayish brown (10YR 3/2) to dark yellowish brown (10YR 3/4) in color and from 7 to 20 inches in thickness. The reaction is medium acid to strongly acid. The A3 horizon is lacking in many profiles, and the Ap or an A1 horizon directly overlies the B2t horizon. The B2t horizon ranges from brown (10YR 4/3) to dark yellowish brown (10YR 4/4) in color. The reaction is medium acid to strongly acid. The C horizon is fine sandy loam to loamy fine sand and has thin strata of silt and clay. In places it is brown (10YR 4/3). The reaction is strongly acid to slightly acid.

Bosket fine sandy loam, 0 to 1 percent slopes (BkA).—This soil has a 7- to 18-inch surface layer of dark-brown to very dark grayish-brown, friable fine sandy loam and a subsoil of yellowish-brown or brown, firm sandy clay loam. The thickness of the subsoil ranges from 12 to 30 inches but is commonly about 24 inches. Below the subsoil is brown or yellowish-brown fine sandy loam or loamy fine sand stratified with thin layers of silt and clay. Small areas of steeper soils, small areas of silt loam, and small areas of Beulah, Dubbs, and Dundee soils were included in mapping.

This soil is medium acid to strongly acid. It is high in natural fertility. The subsoil is readily permeable to roots and moisture, but in some places a plowsole restricts the growth of roots and the movement of water. The available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. It is suited to most of the common crops (fig. 2) but not to rice. It is not ordinarily used for corn or for vegetable crops. The response to lime and fertilizer is good. (Capability unit I-1; woodland group 1; wildlife group 1)

Bosket fine sandy loam, 3 to 8 percent slopes (BkC).—This soil occurs as narrow bands along escarpments. The

surface layer is dark-brown or very dark grayish-brown, friable fine sandy loam 8 to 16 inches thick, and the subsoil is yellowish-brown or brown, firm sandy clay loam. The thickness of the subsoil ranges from 16 to 30 inches but is most commonly about 20 inches. Underlying the subsoil is brown or yellowish-brown fine sandy loam or loamy sand stratified with thin layers of silt and clay. A few small spots of Beulah and Dubbs soils were included in mapping.

This soil is medium acid to strongly acid. It is high in natural fertility. The subsoil is readily permeable to roots and moisture, but in some places a plowsole restricts the growth of roots and the movement of water. Runoff is medium, and the available water capacity is moderate. Erosion is a hazard.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to lime and fertilizer is good. The main crop is soybeans. Cotton and truck crops are grown in some areas. (Capability unit IIIe–1; woodland group 3; wildlife group 1)

Bosket fine sandy loam, gently undulating (0 to 3 percent slopes) (BkU).—This soil has a 7- to 18-inch surface layer of dark-brown or very dark grayish-brown, friable fine sandy loam and a subsoil of yellowish-brown or brown, firm sandy clay loam. The thickness of the subsoil ranges from 12 to 30 inches but is commonly about 20 inches. Underlying the subsoil is brown or yellowish-brown fine sandy loam or loamy fine sand stratified with thin layers of silt and clay. Small areas of steeper soil and a few small areas of Beulah, Dubbs, and Dundee soils were included in mapping.

This soil is medium acid to strongly acid. It is high in natural fertility. The subsoil is readily permeable to roots and moisture, but in some places a plowsole restricts the growth of roots and the movement of water. Runoff is slow, and the available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Cultivation may have to be delayed for short periods after rains because runoff water collects in the swales. The response to lime and fertilizer is good. The main crops are cotton, soybeans, small grain, strawberries, and watermelons. Corn and vegetables are suitable but are not commonly grown. (Capability unit IIe–1; woodland group 1; wildlife group 1)

Bowdre Series

The Bowdre series consists of very dark grayish-brown to dark-brown, moderately well drained, slowly permeable soils on young flood plains along the major rivers. These soils formed in stratified sediments. The slope range is 0 to 3 percent.

Bowdre soils are associated with Mhoon, Sharkey, and Robinsonville soils. They are better drained than Mhoon and Sharkey soils and are coarser textured than Sharkey soils. Bowdre soils are more poorly drained than Robinsonville soils, and they have a finer textured surface layer and a grayer C horizon.

Representative profile of Bowdre silty clay loam, gently undulating, in a moist cultivated field in the NE¼NW¼ NW¼ sec. 13, T. 7 N., R. 4 W.:

Ap1—0 to 4 inches, very dark grayish-brown (10YR 3/2) silty clay loam; moderate, medium, granular structure; friable; many roots; common worm casts, slightly acid; abrupt, smooth boundary.

Ap2—4 to 9 inches, very dark grayish-brown (10YR 3/2) silty clay loam; common, medium, faint mottles of dark yellowish brown and few, medium, faint mottles of dark gray; moderate, medium, subangular blocky structure; friable when moist, slightly sticky when wet; common roots; few, fine, soft, dark-colored concretions; slightly acid; clear, smooth boundary.

B1—9 to 16 inches, loam mottled about equally with very dark grayish brown (10YR 3/2) and dark gray (10YR 4/1); moderate, medium, subangular blocky structure; friable; common roots; few, medium, soft, dark-colored concretions; slightly acid; clear, wavy boundary.

B2—16 to 22 inches, dark grayish-brown (10YR 4/2) sandy loam; common, medium, distinct mottles of dark brown; moderate, medium, subangular blocky structure; friable; common roots; few, fine, soft, dark-colored concretions; slightly acid; clear, wavy boundary.

C1—22 to 33 inches, variegated dark grayish-brown (10YR 4/2), dark yellowish-brown (10YR 4/4), and dark-brown (10YR 3/3) light silty clay loam; moderate, medium, subangular blocky structure; friable; common roots; few, fine, soft, dark-colored concretions; interior of root channels coated with gray; slightly acid; gradual, wavy boundary.

C2—33 to 52 inches +, very dark grayish-brown (10YR 3/2) silty clay loam; common, medium, distinct mottles of dark brown; moderate, medium, subangular blocky structure; friable; common roots; few, fine, soft, dark-colored concretions; slightly acid.

The A horizon ranges from 4 to 9 inches in thickness. It is very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3). The B horizon is sandy loam, silt loam, silty clay loam, or loam. The C horizon is silty clay loam, sandy clay loam, or silt loam. The reaction is slightly acid to neutral throughout the profile.

Figure 2.—**Hill-dropped cotton on Bosket fine sandy loam, 0 to 1 percent slopes.**

Bowdre silty clay loam, 0 to 1 percent slopes (BoA).—This soil has a 4- to 9-inch surface layer of dark grayish-brown to dark-brown, friable silty clay loam and a subsoil of friable loam or silty clay loam mottled about equally with very dark grayish brown and dark gray. Below this is dark grayish-brown loam, silt loam, or silty clay loam mottled with dark brown. A few small areas of Sharkey soils were included in mapping.

This soil is slightly acid to neutral. It is high in natural fertility. It is slowly permeable to roots and moisture. Runoff is slow, and the available water capacity is moderate to high.

This soil is easy to till. It can be worked within a moderate range of moisture content. Planting may have to be delayed, unless surface drainage has been provided. The response to fertilizer is good. The main crop is soybeans. Rice and cotton are grown in some areas. (Capability unit IIw–1; woodland group 2; wildlife group 4)

Bowdre silty clay loam, gently undulating (0 to 3 percent slopes) (BoU).—This soil has a 4- to 9-inch surface layer of dark grayish-brown to dark-brown, friable silty clay loam and a subsoil of friable loam, silt loam, or silty clay loam mottled about equally with very dark grayish brown and dark gray. Below this is dark grayish-brown loam, silt loam, or silty clay loam mottled with dark brown. A few small areas of Sharkey and Commerce soils were included in mapping.

This soil is slightly acid to neutral. It is high in natural fertility. It is slowly permeable. Runoff is slow, and the available water capacity is moderate to high.

This soil is easy to till. It can be worked within a moderate range of moisture content. Farming operations commonly have to be delayed, unless surface drains have been provided, because runoff water accumulates in the swales. The response to fertilizer is good. The main crop is soybeans. Cotton is grown in some areas. (Capability unit IIIw–3; woodland group 2; wildlife group 4)

Bruno Series

The Bruno series consists of dark grayish-brown to brown, excessively drained, sandy soils on the highest part of natural levees. These soils formed in coarse-textured alluvium deposited by major streams.

Bruno soils are adjacent to Beulah, Bosket, and Dubbs soils, but they are coarser textured in the subsoil than any of those soils and they lack a B horizon.

Representative profile of Bruno loamy fine sand, undulating, in a moist cultivated field in the NE¼SE¼SE¼ sec. 23, T. 9 N., R. 3 W.:

Ap1—0 to 7 inches, dark grayish-brown (10YR 4/2) loamy fine sand; structureless; loose; many roots; slightly acid; abrupt, smooth boundary.

Ap2—7 to 12 inches, dark-brown (7.5YR 4/4) loamy fine sand; firm traffic pan is massive and breaks to single grain; common roots; slightly acid; clear, smooth boundary.

C1—12 to 18 inches, dark-brown (7.5YR 4/4) loamy fine sand; massive; loose; common roots; medium acid; gradual, wavy boundary.

C2—18 to 41 inches, dark-brown (7.5YR 4/4) loamy fine sand; massive; loose; common roots; wavy, generally horizontal streaks of reddish brown (5YR 4/3); slightly acid; gradual, wavy boundary.

C3—41 to 52 inches +, yellowish-brown (10YR 5/4) loamy fine sand, common, medium, faint mottles of pale brown increasing in number with depth; massive; loose; common roots; slightly acid.

The Ap horizon ranges from 7 to 12 inches in thickness. It is dark grayish-brown (10YR 4/2) to brown (10YR 4/3) or dark-brown (7.5YR 4/4) loamy fine sand to sandy loam. The C horizon is dark-brown (7.5YR 4/4), brown (10YR 4/3), or yellowish-brown (10YR 5/4) loamy fine sand or loamy sand. The reaction is medium acid to neutral throughout the profile.

Bruno loamy fine sand, gently undulating (0 to 3 percent slopes) (BrU).—This soil has a 7- to 12-inch surface layer of dark grayish-brown, dark-brown, or brown, loose loamy fine sand and an underlying layer of brown, dark-brown, or yellowish-brown loamy fine sand or loamy sand. Small areas of Beulah, Bosket, and Dubbs soils were included in mapping.

This soil is slightly acid to neutral. It is moderately low in natural fertility. There is little runoff, water moves through the soil rapidly, and the available water capacity is low. Wind erosion is a moderate hazard if the soil is not protected by vegetation. The subsoil is readily permeable to roots.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to fertilizer is moderate. The main crops are soybeans, watermelons, wheat, and oats. Cotton and pasture crops are grown in some areas. (Capability unit IIIs–1; woodland group 6; wildlife group 1)

Bruno loamy fine sand, undulating (0 to 8 percent slopes) (BrC).—This soil has a 7- to 12-inch layer of dark grayish-brown, or brown, loose loamy fine sand and an underlying layer of brown or yellowish-brown loamy fine sand or loamy sand. Small areas of Beulah, Bosket, and Dubbs soils were included in mapping.

This soil is slightly acid to neutral. It is moderately low in natural fertility. Runoff is slow, water moves through the soil rapidly, and the available water capacity is low. Wind erosion is a moderate hazard if the soil is not protected by vegetation. The subsoil is readily permeable to roots.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to fertilizer is moderate. The main crops are soybeans and watermelons. Some cotton and pasture crops are grown. (Capability unit IIIs–1; woodland group 6; wildlife group 1)

Calhoun Series

The Calhoun series consists of gray, poorly drained, very slowly permeable, loamy soils. These soils formed in a thick mantle of loess. The slope range is 0 to 1 percent.

Calhoun soils are associated with Calloway and Grenada soils. They are grayer and more poorly drained than Calloway and Grenada soils, and they lack a fragipan. They also differ in that tongues of light-gray soil material from the A2g horizon extend into the B2t horizon.

Representative profile of Calhoun silt loam, in a moist cultivated field in the SW¼SW¼SW¼ sec. 35, T. 8 N., R. 1 W.:

Ap—0 to 4 inches, gray (10YR 5/1) silt loam; common, fine, faint mottles of dark grayish brown; weak, fine, granular structure; very friable; many roots; common, fine, hard and soft, dark-colored concretions; very strongly acid; clear, smooth boundary.

A2g—4 to 16 inches, light-gray (5Y 6/1) silt loam; common, medium, distinct mottles of yellowish brown; weak, medium, subangular blocky structure; very friable; slightly brittle; common roots; few pores; few, fine, dark-colored concretions; very strongly acid; clear, wavy boundary.

B&A—16 to 26 inches, gray (10YR 5/1) silty clay loam; tongues of light-gray (10YR 7/1) silt loam about 2 inches wide at the top, tapering to 1 inch at the bottom, and terminating in cups of gray (10YR 5/1) clay; moderate, medium, subangular blocky structure; friable; slightly brittle; few roots; common pores; thin discontinuous clay films on some peds; thin silt coatings on most peds; few, hard, dark-colored concretions; very strongly acid; gradual, wavy boundary.

B21tg—26 to 40 inches, grayish-brown (10YR 5/2) silty clay loam; moderate, medium, subangular blocky structure; firm when moist, slightly plastic when wet; slightly brittle; few roots; continuous clay films; silt coatings on some ped faces; common pores; few, hard, dark-colored concretions; very strongly acid; gradual, wavy boundary.

B22tg—40 to 52 inches +, grayish-brown (2.5Y 5/2) light silty clay loam; common, medium, distinct mottles of yellowish brown; moderate, medium, subangular blocky structure; firm; brittle; continuous clay films; common pores; common, fine and medium, hard, dark-colored concretions; very strongly acid.

The Ap horizon is gray (10YR 6/1) to dark gray (10YR 4/1), and the A2g horizon is gray (10YR 5/1 to 5Y 6/1) to light gray (10YR 7/1). The B&A horizon is gray (10YR 5/1) to grayish-brown silty clay loam in the remnants of the B horizon and light gray (10YR 7/1) or gray (10YR 6/1) in the tongues of silt or silt loam from the A horizon. The B21tg horizon ranges from dark gray (10YR 4/1) to grayish brown (10YR 5/2) in color and from silty clay loam to silty clay in texture. The B22tg horizon is grayish-brown (10YR 5/2 or 2.5Y 5/2) silt loam to silty clay loam. The reaction is strongly acid to very strongly acid throughout the solum.

Calhoun silt loam (0 to 1 percent slopes) (Ca).—This soil is on wide flats and in depressions. The surface layer is gray, grayish-brown, or dark-gray, friable silt loam 5 to 9 inches thick over about 8 inches of gray or light-gray silt loam. The subsoil is gray, firm, slightly compact silty clay loam. A few small areas of Calloway and Zachary soils were included in mapping.

This soil is strongly acid to very strongly acid. It is moderate in natural fertility. The surface layer is readily permeable to roots and moisture, but the compact subsoil restricts the growth of roots and the movement of water. Runoff is very slow to ponded, and wetness is a severe hazard. The available water capacity is low.

This soil is easy to till, and it can be worked throughout a wide range of moisture content. Farming operations commonly have to be delayed, unless drainage has been provided. The response to lime and fertilizer is good. The main crops are rice and soybeans, but cotton is grown in some areas. (Capability unit IIIw–5; woodland group 10; wildlife group 6)

Calloway Series

The Calloway series consists of grayish-brown, somewhat poorly drained, slowly permeable soils that have a fragipan. These soils formed in loess. The slope range is 0 to 3 percent.

These soils are associated with Calhoun, Henry, and Grenada soils. Calloway soils are less gray and better drained than the poorly drained Calhoun soils, and they lack a B&A horizon. They are less gray and better drained than the poorly drained Henry soils and are generally shallower to the fragipan. They are grayer and more poorly drained than the moderately well drained Grenada soils, and they have a more strongly developed fragipan and are mottled nearer the surface.

Representative profile of Calloway silt loam, 0 to 1 percent slopes, in a moist cultivated field in the SW¼SW¼ SW¼ sec. 36, T. 7 N., R. 1 W.:

Ap—0 to 4 inches, very dark grayish-brown (10YR 3/2) silt loam; weak, fine, granular structure; very friable; many roots; few, hard, dark-colored concretions; strongly acid; clear, smooth boundary.

A2—4 to 9 inches, brown (10YR 5/3) silt loam; common, medium, faint mottles of dark brown; weak, medium, subangular blocky structure; very friable; common roots; few, fine and medium, hard, dark-colored concretions; very strongly acid; gradual, smooth boundary.

B2—9 to 16 inches, yellowish-brown (10YR 5/4) silt loam; common, medium, distinct mottles of grayish brown and few, fine, faint mottles of gray; moderate, medium, subangular blocky structure; friable; common roots; common, fine and medium, hard, dark-colored concretions; very strongly acid; gradual, smooth boundary.

A'2x—16 to 25 inches, gray (10YR 6/1) silt loam; common, medium, distinct mottles of yellowish brown; massive in place but breaks to weak, medium, subangular blocky structure; very friable; brittle; few roots; common pores; few, fine and medium, hard, dark-colored concretions; very strongly acid; clear, smooth boundary.

B'x—25 to 39 inches, gray (10YR 6/1) silty clay loam; few, medium, distinct mottles of yellowish brown; weak, coarse polygons breaking to moderate, medium, subangular blocks; firm when moist, slightly sticky when wet; brittle; few roots; common clay films; few, fine and medium, soft and hard concretions; very strongly acid; gradual, smooth boundary.

Cg—39 to 52 inches +, grayish-brown (10YR 5/2) silty clay loam; common, medium, faint mottles of yellowish brown; weak, coarse polygons breaking to weak, medium, subangular blocks; firm; few roots; common, fine, hard, dark-colored concretions; strongly acid.

The A horizon ranges from 4 to 9 inches in thickness. The Ap horizon ranges from very dark grayish brown (10YR 3/2) to brown (10YR 5/3) in color, and the A2 horizon from brown (10YR 5/3) to pale brown (10YR 6/3) to yellowish brown (10YR 5/4). The B2 horizon is silt loam or silty clay loam mottled with gray (10YR 6/1 or 5/1) or grayish brown (10YR 5/2). It is 7 to 15 inches thick. The depth to the fragipan ranges from 15 to 22 inches. The A'2x horizon is silt loam or silty clay loam. The B'x horizon is gray (10YR 5/1) to light gray (10YR 7/1) mottled with yellowish brown or brown. The reaction is strongly acid to very strongly acid throughout the profile.

Calloway silt loam, 0 to 1 percent slopes (CIA).—Nearly all of this soil is on wide flats or low ridges east of Bayou DeView. The surface layer is very dark grayish-brown or brown, friable silt loam 4 to 9 inches thick. The subsoil is friable silt loam or silty clay loam mottled with yellowish brown, brown, and gray. In the lower part of the subsoil is a firm, brittle fragipan of gray silt loam or silty clay loam mottled with yellowish brown or brown. A few small areas of Henry and Calhoun soils were included in mapping.

This soil is strongly acid to very strongly acid. It is moderate in natural fertility. Above the fragipan, it is readily permeable to roots and moisture, but the fragipan restricts the growth of roots and the movement of water. Runoff is slow, and wetness is a moderate hazard. The available water capacity is moderate.

This soil is easy to till, and it can be worked throughout a wide range of moisture content. Planting may have to be delayed in spring, unless surface drains have been provided. The response to lime and fertilizer is good. The main crops are rice and soybeans. Cotton is grown in some areas.

(Capability unit IIw–3; woodland group 7; wildlife group 5)

Calloway silt loam, 1 to 3 percent slopes (CIB).—Nearly all of this soil is on wide low ridges east of Bayou DeView. The surface layer is very dark grayish-brown to brown, friable silt loam 4 to 9 inches thick. The subsoil is friable silt loam or silty clay loam mottled with yellowish brown, brown, and gray. In the lower part of the subsoil is a firm, brittle fragipan of gray silt loam or silty clay loam mottled with yellowish brown or brown. A few small areas of Henry and Grenada soils were included in mapping.

This soil is strongly acid to very strongly acid. It is moderate in natural fertility. Above the fragipan, it is readily permeable to roots and moisture, but the fragipan restricts the growth of roots and the movement of water. Runoff is slow, and wetness is a hazard. The available water capacity is moderate.

This soil is easy to till, and it can be worked throughout a wide range of moisture content. Planting may have to be delayed in spring, unless surface drains have been provided. The response to lime and fertilizer is good. The main crops are soybeans and rice. Cotton is grown in some areas. (Capability unit IIw–3; woodland group 7; wildlife group 5)

Commerce Series

The Commerce series consists of dark yellowish-brown, somewhat poorly drained, permeable soils on young natural levees. These soils formed in stratified loamy alluvium deposited by the White River. The slope range is 0 to 3 percent.

Commerce soils are adjacent to Mhoon, Robinsonville, and Sharkey soils. They are better drained than Mhoon soils and more poorly drained than Robinsonville soils. Commerce soils are coarser textured, better drained, and more stratified than Sharkey soils, which formed in thick beds of poorly drained clay.

Representative profile of Commerce fine sandy loam, gently undulating, in a moist cultivated field in the NE¼ NW¼NW¼ sec. 24, T. 9 N., R. 4 W.:

Ap—0 to 7 inches, dark yellowish-brown (10YR 3/4) fine sandy loam; weak, fine, granular structure; very friable; common roots; few pores; few, soft, dark-colored concretions; neutral; clear, wavy boundary.

B1—7 to 13 inches, brown (10YR 5/3) fine sandy loam; common, medium, distinct mottles of very dark grayish brown and common, medium, faint mottles of yellowish brown; massive in place but breaks to weak, medium, subangular blocky structure; very friable; common roots; common pores; common worm casts; common, soft, dark-colored concretions; neutral; clear, smooth boundary.

B2—13 to 18 inches, brown (10YR 5/3) silt loam; common, medium, distinct mottles of gray and very dark grayish brown; weak, medium, subangular blocky structure; friable; common roots; common pores; common, soft, dark-colored concretions; neutral; clear, wavy boundary.

C1—18 to 24 inches, very dark grayish-brown (10YR 3/2) loam; common, medium, distinct mottles of dark yellowish brown; massive but breaks to weak, medium, subangular blocky fragments; friable; few roots; common pores; common, medium, soft, dark-colored concretions; neutral; clear, wavy boundary.

C2g—24 to 32 inches, dark-gray (10YR 4/1) silt loam; common, fine, distinct mottles of dark brown; massive but breaks to medium, subangular blocky fragments; friable; few roots; common pores; common, soft, medium concretions; neutral; clear, wavy boundary.

C3g—32 to 52 inches +, gray (10YR 5/1) silty clay loam; common, medium, faint mottles of dark gray and common, medium, distinct mottles of yellowish brown; massive but breaks to medium, subangular blocky fragments; firm when moist, slightly sticky when wet; few roots; common pores; few, soft, dark-colored concretions; neutral.

The Ap horizon is dark yellowish-brown (10YR 3/4), dark-brown (10YR 3/3 or 4/3), very dark grayish-brown (10YR 3/2), or brown (10YR 5/3) silt loam to fine sandy loam 4 to 8 inches thick. Reaction in this horizon is neutral. The B horizon is brown (10YR 5/3) to very dark grayish-brown (10YR 3/2) silt loam, fine sandy loam, sandy clay loam, or silty clay loam mottled with dark grayish brown (10YR 4/2) or yellowish brown (10YR 5/4). The Cg horizon is dark-gray (10YR 4/1) or gray (10YR 5/1) silty clay loam, sandy clay loam, silt loam, fine sandy loam, or loamy fine sand mottled with dark grayish brown (10YR 4/2), dark brown (10YR 3/3), or yellowish brown (10YR 5/6). Reaction in this horizon is slightly acid to neutral.

Commerce fine sandy loam, gently undulating (0 to 3 percent slopes) (CmU).—This soil is flooded occasionally in winter. It has a 4- to 7-inch surface layer of dark yellowish-brown, dark-brown, very dark grayish-brown, or brown, friable fine sandy loam and a subsoil of gray and brown, mottled, friable silt loam or silty clay loam. The underlying layer is dark-gray or gray, friable sandy clay loam or silty clay loam mottled with dark grayish brown and dark brown. Some areas of silty soils and a few small areas of Robinsonville and Bowdre soils were included in mapping.

This soil is slightly acid to neutral. It is high in natural fertility. It is readily permeable to roots and moisture. Runoff is slow, and wetness is a slight to moderate hazard. The available water capacity is moderate. Because of the flooding, surface scouring is a hazard.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to fertilizer is good. The main crop is soybeans. Cotton and rice are grown in some areas. (Capability unit IIw–2; woodland group 1; wildlife group 1)

Commerce silt loam, gently undulating (0 to 3 percent slopes) (CoU).—This soil is flooded occasionally in winter. It has a 4- to 8-inch surface layer of dark-brown or very dark grayish-brown, friable silt loam and a subsoil of brown or dark grayish-brown silt loam or silty clay loam. The underlying layer is dark grayish-brown or gray, friable silt loam or silty clay loam mottled with yellowish brown. A few small areas of Robinsonville, Bowdre, Mhoon, and Sharkey soils were included in mapping.

This soil is slightly acid to neutral. It is high in natural fertility. The subsoil is readily permeable to roots and moisture. Runoff is slow, and wetness is a slight to moderate hazard. The available water capacity is moderate. Because of the flooding, surface scouring is a hazard.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to fertilizer is good. The main crop is soybeans. Cotton is grown in some places. (Capability unit IIw–2; woodland group 1; wildlife group 1)

Crowley Series

The Crowley series consists of dark grayish-brown, poorly drained soils. These soils formed in loess underlain by finer-textured sediments. The slope range is 0 to 3 percent.

Crowley soils are in the southeastern part of the county, east of Bayou DeView. They are associated with Hillemann, Calloway, Grenada, and Zachary soils. They have more clay in their B horizon than Hillemann soils but no sodium. Crowley soils are more poorly drained than Calloway and Grenada soils, and they lack a fragipan. They are less gray than Zachary soils, which are on flood plains where fresh sediments are deposited frequently.

The Crowley soils in Woodruff County are mapped only as part of two undifferentiated groups with Hillemann soils.

Representative profile of Crowley silt loam, 0 to 1 percent slopes, in a moist cultivated field in the SE¼NW¼ NW¼ sec. 28, T. 5 N., R. 1 W.:

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; abundant fine roots; medium acid; abrupt, smooth boundary.

A2g—7 to 14 inches, light-gray (10YR 6/1) silt loam; common, fine, distinct mottles of yellowish brown; weak, fine, granular structure; friable; plentiful fine roots; common, fine, dark-colored concretions; strongly acid; abrupt, wavy boundary.

B21tg—14 to 24 inches, gray (10YR 5/1) silty clay; many, medium, prominent mottles of red; moderate, medium, angular blocky structure; very firm; some peds coated with light-gray (10YR 7/1) silt; few roots; common patchy clay films; few, small, dark-colored concretions; very strongly acid; clear, wavy boundary.

B22t—24 to 43 inches, grayish-brown (10YR 5/2) silty clay loam; common, medium, distinct mottles of yellowish brown; moderate, medium, subangular blocky structure; firm; black stains on some ped faces; common, fine, dark-colored concretions; medium acid; gradual, smooth boundary.

B3—43 to 52 inches +, light brownish-gray (10YR 6/2) silt loam; common, medium, distinct mottles of yellowish brown; weak, medium, subangular blocky structure; friable; common, fine, dark-colored concretions; medium acid.

The Ap horizon ranges from dark grayish brown to brown in color, and it is free of mottles except where rice has been grown. The A2g horizon is light brownish gray (10YR 6/2) to gray (10YR 5/1). The B21tg horizon is gray (10YR 5/1 or 6/1) silty clay or heavy silty clay loam, and the B22t horizon is light brownish-gray (10YR 6/2), grayish-brown (10YR 5/2), or gray (10YR 5/1 or 6/1) silty clay loam to light silty clay. The B3 horizon is grayish-brown (10YR 5/2) to pale-brown (10YR 6/3) silt loam or silty clay loam. Reaction in this horizon is medium acid to slightly acid.

Crowley and Hillemann silt loams, 0 to 1 percent slopes (CrA).—The Crowley soil in this undifferentiated group has a surface layer of dark grayish-brown to brown silt loam. The upper part of the subsoil is gray silty clay mottled with red, and the lower part is gray or grayish-brown, mottled silty clay loam or silt loam. A profile of Hillemann silt loam is described under the heading "Hillemann Series." The Crowley soil makes up as much as 70 percent of some of the areas but is lacking from others; the Hillemann soil makes up 30 to 90 percent of each area. Small spots of Calloway and Zachary soils were included in mapping.

These soils are moderate in natural fertility. They are medium acid to strongly acid in the upper part of the profile and slightly acid to medium acid in the lower part. The lower layers of the Hillemann soil contain a large amount of sodium. Runoff is slow, and wetness is a moderate to severe hazard. The surface layer is readily permeable to roots and moisture, but the firm, clayey subsoil restricts the growth of roots and the movement of water. The available water capacity is moderate.

These soils are easy to till and can be worked throughout a wide range of moisture content. Farming operations commonly have to be delayed, unless surface drains have been provided. The response to lime and fertilizer is good. If it is necessary to level areas of the Hillemann soil, the depth to the concentration of sodium should be determined before cuts are made. Productivity will be impaired if sodium is too near the surface. The main crops are rice and soybeans. Cotton and lespedeza are grown in some areas. (Crowley soil is in capability unit IIIw-5, woodland group 11, and wildlife group 6; Hillemann soil is in capability unit IIw–4, woodland group 11, and wildlife group 6)

Crowley and Hillemann silt loams, 1 to 3 percent slopes (CrB).—The Crowley soil in this unit has a surface layer of dark grayish-brown to brown silt loam. The upper part of the subsoil is gray silty clay mottled with red, and the lower part is gray or grayish-brown, mottled silty clay loam or silt loam. A profile of Hillemann silt loam is described under the heading "Hillemann Series." The Crowley soil makes up as much as 70 percent of some areas but is lacking from others; the Hillemann soil makes up 30 to 90 percent of each area. Small spots of Calloway and Grenada soils were included in mapping.

Runoff is slow, and wetness is a moderate hazard. The surface layer is readily permeable to roots and moisture, but the firm, clayey subsoil restricts the growth of roots and the movement of water. The available water capacity is moderate. The reaction is medium acid to strongly acid in the upper part of the profile and slightly acid to medium acid in the lower part. The lower layers of the Hillemann soil contain a large amount of sodium. Natural fertility is moderate.

These soils are easy to till and can be worked throughout a wide range of moisture content. Farming operations commonly have to be delayed, unless surface drains have been provided. The response to lime and fertilizer is good. If it is necessary to level areas of the Hillemann soil, the depth to the concentration of sodium should be determined before cuts are made. Productivity will be impaired if sodium is too near the surface. The main crops are rice and soybeans, but cotton and lespedeza are grown in some areas. (Crowley soil is in capability unit IIIw–5, woodland group 11, and wildlife group 6; Hillemann soil is in capability unit IIw–4, woodland group 11, and wildlife group 6)

Dubbs Series

The Dubbs series consists of brown to dark grayish-brown, well drained to moderately well drained, permeable soils on natural levees along bayous and the former channels of major rivers. These soils formed in stratified sandy and silty sediments. The slope range is 0 to 3 percent.

Dubbs soils are associated with Beulah, Bosket, and Dundee soils. They are finer textured than Beulah soils. They are better drained than Bosket and Dundee soils, and they are browner than Dundee soils.

Representative profile of Dubbs silt loam, 0 to 1 percent slopes, in a moist cultivated field in the NE¼SW¼SE¼ sec. 22, T. 8 N., R. 2 W.:

Ap—0 to 7 inches, dark-brown (10YR 4/3) silt loam; weak, fine, granular structure; very friable; many roots; medium acid; abrupt, smooth boundary.

B1—7 to 16 inches, dark-brown (10YR 4/3) silt loam; weak, medium, subangular blocky structure; very friable; common roots; common pores; medium acid; clear, smooth boundary.

B21t—16 to 25 inches, dark-brown (7.5YR 4/4) silty clay loam; moderate, medium, subangular blocky structure; friable; common roots; common pores; common patchy clay films; some dark-colored stains on peds; strongly acid; gradual, smooth boundary.

B22t—25 to 39 inches, dark-brown (7.5YR 4/4) clay loam; moderate, medium, subangular blocky structure; friable; common roots; common pores; continuous clay films; common dark-colored stains on peds; few, soft, dark-colored concretions; strongly acid; clear, wavy boundary.

B3—39 to 52 inches +, dark-brown (10YR 4/3) fine sandy loam; moderate, medium, subangular blocky structure; few roots; common pores; some dark stains on peds; few, medium, dark-colored concretions; strongly acid.

The Ap horizon is dark grayish-brown (10YR 4/2) to dark-brown (10YR 4/3) fine sandy loam or silt loam. Some profiles lack a B1 horizon, but if present, this horizon is brown (10YR 5/3), yellowish-brown (10YR 5/4), or dark-brown loam, silt loam, or light silty clay loam. The B2 horizon is brown (10YR 4/3) to dark-brown (7.5YR 4/4) loam, clay loam, or silty clay loam. The B3 horizon is brown (10YR 5/3) to dark-brown (10YR 4/3) loam, silt loam, or fine sandy loam. In places the B22t and B3 horizons are mottled with gray (10YR 5/1) or grayish brown (10YR 5/2). In some areas where the B3 horizon is lacking, there is, at a depth of about 40 inches, a C horizon of gray (10YR 5/1), light brownish-gray (10YR 6/2), or grayish-brown (10YR 5/2) fine sandy loam or loamy fine sand. Reaction is medium acid to strongly acid throughout the solum.

Dubbs fine sandy loam, 0 to 1 percent slopes (DbA).—Nearly all of this soil is on natural levees. It has a 7-inch surface layer of dark grayish-brown or brown, friable fine sandy loam and a subsoil of dark-brown to yellowish-brown silty clay loam or clay loam 18 to 45 inches thick. The underlying material is grayish-brown, mottled sandy clay loam or loam. A few spots of silt loam and some small areas of Bosket, Dundee, and Tuckerman soils were included in mapping.

This soil is medium acid to strongly acid. It is high in natural fertility. Except in places where a plowsole has formed, it is readily permeable to roots and moisture. The available water capacity is moderate. The organic-matter content is medium.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to lime and fertilizer is good. The main crops are cotton, soybeans, and truck crops. (Capability unit I–1; woodland group 1; wildlife group 1)

Dubbs fine sandy loam, gently undulating (0 to 3 percent slopes) (DbU).—This soil is on natural levees. It has a 7-inch surface layer of dark grayish-brown or brown, friable fine sandy loam and a subsoil of dark-brown to yellowish-brown silty clay loam or clay loam 18 to 45 inches thick. The underlying material is grayish-brown, mottled sandy clay loam, loam, or sandy loam. Small spots of silty soils, small spots of steeper soils, and small areas of Beulah, Bosket, and Dundee soils were included in mapping.

This soil is medium acid to strongly acid. It is high in natural fertility. Except where there is a plowsole, it is readily permeable to roots and moisture. Runoff is slow to medium, and the available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Cultivation may have to be delayed after a rain because runoff water collects in swales. The response to lime and fertilizer is good. The main crops are soybeans, cotton, and truck crops. (Capability unit IIe–1; woodland group 1; wildlife group 1)

Dubbs silt loam, 0 to 1 percent slopes (DsA).—This soil is on natural levees and is well drained. It has a 4- to 7-inch surface layer of brown, dark-brown, or dark grayish-brown, friable silt loam and a subsoil of brown or dark-brown silty clay loam. The thickness of the subsoil ranges from 18 to 45 inches. The underlying material is brown or dark-brown fine sandy loam, loam, or silt loam. A few small areas of Bosket soils and spots of fine sandy loam were included in mapping.

This soil is medium acid to strongly acid. It is high in natural fertility. It is readily permeable to roots and moisture and is high in available water capacity.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to lime and fertilizer is good. The main crops are cotton, soybeans, and truck crops. (Capability unit I–1; woodland group 1; wildlife group 1)

Dubbs silt loam, 1 to 3 percent slopes (DsB).—This soil occurs as narrow bands on low ridges on natural levees. It is well drained. It has a 4- to 7-inch surface layer of brown, dark-brown, or dark grayish-brown, friable silt loam and a subsoil of brown or dark-brown silty clay loam. The thickness of the subsoil ranges from 18 to 45 inches. Underlying the subsoil is brown or dark-brown fine sandy loam, loam, or silt loam. A few small spots of steeper soils, a few small spots of fine sandy loam, and some small areas of Bosket soils were included in mapping.

This soil is readily permeable to roots and moisture. It is high in available water capacity. Runoff is slow. The reaction is medium acid to strongly acid, and natural fertility is high.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to lime and fertilizer is good. The main crops are soybeans, cotton, and truck crops. (Capability unit IIe–1; woodland group 1; wildlife group 1)

Dundee Series

The Dundee series consists of very dark grayish-brown to brown, somewhat poorly drained soils on natural levees along bayous and former channels of major rivers. These soils formed in stratified loamy and clayey sediments. The slope range is 0 to 3 percent.

Dundee soils are associated with Bosket, Dubbs, Beulah, Amagon, and Tuckerman soils. They are less well drained than Dubbs, Bosket, and Beulah soils. Dundee soils are better drained than Amagon and Tuckerman soils, which are gray throughout their profiles.

Representative profile of Dundee fine sandy loam, 0 to 1 percent slopes, in a moist cultivated field in the NE¼NW¼NW¼ sec. 24, T. 8 N., R. 3 W.:

Ap—0 to 5 inches, dark-brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; very friable; common roots; common, soft and hard, dark-colored concretions; very strongly acid; clear, smooth boundary.

A1—5 to 10 inches, dark-brown (10YR 4/3) fine sandy loam; common, medium, faint mottles of brown; weak, medium, granular structure; very friable; common roots; few, medium, soft, dark-colored concretions; very strongly acid; abrupt, smooth boundary.

B21t—10 to 20 inches, grayish-brown (10YR 5/2) sandy clay loam; common, medium, distinct mottles of yellowish brown; weak, medium, subangular blocky structure;

friable; common roots; few patchy clay films; common, medium, soft, dark-colored concretions; very strongly acid; gradual, smooth boundary.

B22t—20 to 40 inches, light brownish-gray (10YR 6/2) sandy clay loam; common, medium, distinct mottles of yellowish brown; weak, medium, subangular blocky structure; friable; few pores; few patchy clay films; common, medium and coarse, soft, dark-colored concretions; very strongly acid; abrupt, wavy boundary.

B3tg—40 to 52 inches +, light-gray (10YR 6/1) sandy clay loam; few, fine, distinct mottles of yellowish brown; moderate, medium, subangular blocky structure; firm; few pores; common clay films; common, medium and large, soft, dark-colored concretions; very strongly acid.

The Ap horizon ranges from very dark grayish-brown (10YR 3/2) to brown (10YR 5/3) in color. It is silt loam or fine sandy loam. In some profiles the Ap horizon is directly over the B horizon. The B2t horizon is light brownish-gray (10YR 6/2) to brown (10YR 5/3) silty clay loam or sandy clay loam mottled with yellowish brown (10YR 5/4) and gray (10YR 5/1). The B3tg horizon is silty clay loam, sandy clay loam, or fine sandy loam. The depth to this horizon ranges from 24 to more than 40 inches. In some profiles there is a Cg horizon of fine sandy loam or loamy fine sand at a depth of 30 to 40 inches. The reaction is strongly acid to very strongly acid throughout the profile.

Dundee fine sandy loam, 0 to 1 percent slopes (DuA).—This soil has a 5- to 8-inch surface layer of dark-brown, brown, or very dark grayish-brown, friable fine sandy loam. The upper part of the subsoil is grayish-brown sandy clay loam or silty clay loam mottled with yellowish brown, and the lower part is light brownish-gray sandy clay loam or silty clay loam mottled with yellowish brown. The underlying material is gray sandy clay loam, silty clay loam, fine sandy loam, or loamy fine sand. A few small spots of Amagon, Tuckerman, Dubbs, Bosket, and Beulah soils were included in mapping.

This soil is strongly acid to very strongly acid. It is moderately high in natural fertility. Except where there is a plowsole, it is readily permeable to roots and moisture. Runoff is slow, and the available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Planting usually has to be delayed in spring, unless surface drains have been provided. The response to lime and fertilizer is good. The main crops are cotton and soybeans. Rice is grown in some areas. (Capability unit I–1; woodland group 3; wildlife group 1)

Dundee fine sandy loam, 1 to 3 percent slopes (DuB).—This soil occurs as small narrow bands along escarpments. It has a 5- to 7-inch surface layer of dark-brown, brown, or dark grayish-brown, friable fine sandy loam. The upper part of the subsoil is grayish-brown sandy clay loam or silty clay loam mottled with yellowish brown, and the lower part is light brownish-gray sandy clay loam or silty clay loam mottled with yellowish brown. The underlying material is gray sandy clay loam, silty clay loam, fine sandy loam, or loamy fine sand. A few small areas of Amagon, Bosket, Dubbs, Beulah, and Tuckerman soils were included in mapping.

This soil is strongly acid to very strongly acid. It is moderately high in fertility. It is readily permeable to roots and moisture. Runoff is slow, and the available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to lime and fertilizer is good. The main crops are cotton and soybeans. (Capability unit IIe–1; woodland group 3; wildlife group 1)

Dundee fine sandy loam, gently undulating (0 to 3 percent slopes) (DuU).—This soil has a 5- to 7-inch surface layer of dark-brown, brown, or dark grayish-brown, friable fine sandy loam. The upper part of the subsoil is grayish-brown sandy clay loam or silty clay loam mottled with yellowish brown, and the lower part is light brownish-gray sandy clay loam or silty clay loam mottled with yellowish brown. The underlying material is gray sandy clay loam, silty clay loam, fine sandy loam, or loamy fine sand. A few small areas of Amagon, Beulah, Bosket, Dubbs, and Tuckerman soils were included in mapping.

This soil is strongly acid to very strongly acid. It is moderately high in fertility. Except in places where there is a plowsole, it is readily permeable to roots and moisture. Runoff is slow, and excess water collects in swales. The available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Planting usually has to be delayed in spring, unless surface drains have been provided. The response to lime and fertilizer is good. The main crops are cotton and soybeans. (Capability unit IIw–2; woodland group 3; wildlife group 1)

Dundee silt loam, 0 to 1 percent slopes (DvA).—This soil has a 5- to 8-inch surface layer of dark-brown, brown, or dark grayish-brown, friable silt loam. The upper part of the subsoil is grayish-brown silty clay loam or sandy clay loam mottled with yellowish brown, and the lower part is light brownish-gray silty clay loam or sandy clay loam mottled with yellowish brown. The thickness of the subsoil ranges from 20 to 36 inches but is commonly about 20 inches. The underlying material is gray sandy clay loam, silty clay loam, silt loam, fine sandy loam, or loamy fine sand. A few small areas of Amagon, Bosket, Dubbs, and Tuckerman soils were included in mapping.

This soil is strongly acid to very strongly acid. It is moderately high in fertility. Except where there is a plowsole, it is readily permeable to roots and moisture. Runoff is slow, and the available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Planting commonly has to be delayed in spring, unless surface drains have been provided. The response to lime and fertilizer is good. The main crops are cotton and soybeans. Rice is grown in some areas. (Capability unit I–1; woodland group 3; wildlife group 1)

Dundee silt loam, gently undulating (0 to 3 percent slopes) (DvU).—This soil has a 5- to 7-inch surface layer of dark-brown, brown, or dark grayish-brown, friable silt loam. The upper part of the subsoil is grayish-brown silty clay loam or sandy clay loam mottled with shades of yellowish brown, and the lower part is light brownish-gray silty clay loam or sandy clay loam mottled with shades of yellowish brown. Below this is gray silty clay loam, sandy clay loam, sandy loam, fine sandy loam, silt loam, or loamy fine sand. A few spots of Amagon, Bosket, Dubbs, and Tuckerman soils were included in mapping.

This soil is strongly acid to very strongly acid. It is moderately high in fertility. Except where a plowsole has formed, it is readily permeable to roots and moisture. Runoff is slow, and excess water collects in swales. The available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Planting commonly has to be delayed in spring, unless surface drains have been provided. The response to lime and fertilizer is good. The main crops are cotton and soybeans. (Capability unit IIw–2; woodland group 3; wildlife group 1)

Foley Series

The Foley series consists of very dark grayish-brown, somewhat poorly drained to poorly drained, slowly permeable soils on alluvial terraces. These soils formed in silty sediments. The slope range is 0 to 1 percent. The lower part of the B horizon contains a large amount of sodium.

Foley soils are adjacent to Bosket, Dubbs, Amagon, Tuckerman, Lafe, and Grubbs soils. None of the associated soils except the Lafe soils have concentrations of sodium. Foley soils are grayer and more poorly drained than Bosket and Dubbs soils. They have a more compact B horizon than Amagon and Tuckerman soils. They differ from Lafe soils in being acid in the upper part of the B horizon instead of alkaline throughout the B horizon. Foley soils have a coarser textured B horizon than Grubbs soils.

The Foley soils in Woodruff County are mapped only as part of complexes with Grubbs and Lafe soils. These mapping units are described under the headings "Grubbs Series" and "Lafe Series."

Representative profile of Foley silt loam, in a moist wooded area in the NW¼NW¼NW¼ sec. 27, T. 8 N., R. 2 W.:

A1—0 to 5 inches, very dark grayish-brown (10YR 3/2) silt loam; weak, fine, granular structure; friable; many roots; few, fine, dark-colored concretions; strongly acid; clear, smooth boundary.

A2—5 to 8 inches, light brownish-gray (10YR 6/2) silt loam; few, fine mottles of dark brown; weak, fine, granular structure; friable; many roots; common, fine and medium, dark-colored concretions; medium acid; abrupt, wavy boundary.

B1g—8 to 16 inches, grayish-brown (10YR 5/2) heavy silt loam; moderate, medium, subangular blocky structure; friable when moist, slightly sticky and slightly plastic when wet; common roots; few, fine, hard, dark-colored concretions; strongly acid; clear, smooth boundary.

B21tg—16 to 22 inches, grayish-brown (10YR 5/2) silty clay loam; weak, fine, angular blocky structure; friable; common patchy clay films; few, medium, hard, dark-colored concretions; medium acid; abrupt, wavy boundary.

B22tg—22 to 42 inches, dark grayish-brown (10YR 4/2) silty clay loam and pockets of silt; few crevices lined with brown clay; weak, coarse prisms breaking to moderate, coarse, angular blocks; very hard when dry, very firm when moist, and sticky and plastic when wet; few fine roots; very dark gray (10YR 3/1) and black (10YR 2/1) coatings on ped faces; common, medium, hard, dark-colored concretions; mildly alkaline; gradual, wavy boundary.

C—42 to 72 inches +, pale-brown (10YR 6/3) silt loam; common, medium, distinct mottles of yellowish brown; massive; friable; common nodules of calcium carbonate; strongly alkaline.

The A horizon is very dark grayish brown (10YR 3/2), dark grayish brown (10YR 4/2), grayish brown (10YR 5/2), or brown (10YR 5/3) and is 6 to 12 inches thick. The B1g horizon is gray (10YR 5/1), grayish-brown (10YR 5/2), or light brownish-gray (10YR 6/2) silt loam or silty clay loam mottled with shades of brown and yellow. The B21tg horizon is gray (10YR 5/1), grayish brown (10YR 5/2), or dark grayish brown (10YR 4/2). Above a depth of 15 to 25 inches, the solum is medium acid to strongly acid; below that depth it is neutral to moderately alkaline, and sodium and magnesium make up 20 to more than 50 percent of the exchangeable-cation content. The C horizon is mildly alkaline to strongly alkaline. The depth to this horizon is 30 to 48 inches.

Forestdale Series

The Forestdale series consists of very dark grayish-brown to grayish-brown, poorly drained, slowly permeable soils on natural levees. These soils formed in old stratified clayey and loamy alluvium.

Forestdale soils are associated with Amagon, Dundee, and Sharkey soils. They are finer textured than Amagon and Dundee soils. Forestdale soils are more acid and less clayey than Sharkey soils, and they have a B horizon, which Sharkey soils lack.

Representative profile of Forestdale silty clay loam, in a moist cultivated field in the NE¼NW¼SE¼ sec. 12, T. 5 N., R. 4 W.:

Ap—0 to 7 inches, very dark grayish-brown (10YR 3/2) silty clay loam; moderate, fine, granular structure; friable; plentiful roots; few, fine, dark-colored concretions; strongly acid; abrupt, smooth boundary.

B2tg—7 to 33 inches, gray (10YR 5/1) light silty clay; common, medium, distinct mottles of yellowish brown; moderate, medium, subangular blocky structure; firm when moist, slightly plastic when wet; few roots; common patchy clay films; few, hard, dark-colored concretions; strongly acid; gradual, smooth boundary.

B3g—33 to 52 inches +, gray (10YR 6/1) heavy silt loam; common, medium, distinct mottles of yellowish brown and dark yellowish brown; moderate, medium, subangular blocky structure; friable; common, hard, dark-colored concretions; very strongly acid.

The Ap horizon is very dark grayish brown (10YR 3/2) to grayish brown (10YR 5/2) and is 5 to 9 inches thick. The B2tg horizon is gray (10YR 5/1 or 6/1) heavy silt loam to light silty clay. It is 15 to 30 inches thick. The B3g horizon is gray (10YR 5/1) or light-gray (10YR 6/1) silt loam, silty clay loam, sandy clay loam, or fine sandy loam.

Forestdale silty clay loam (0 to 1 percent slopes) (Fo).—Nearly all of this soil is in depressions and old filled stream channels on natural levees. It has a 7-inch surface layer of very dark grayish-brown to grayish-brown silty clay loam and a subsoil of gray heavy silty clay loam or silty clay mottled with yellowish brown. The underlying material is gray silty clay loam to fine sandy loam. A few small areas of Sharkey, Bowdre, Amagon, and Mhoon soils were included in mapping.

This soil is strongly acid to very strongly acid. It is moderate in natural fertility. The surface layer is readily permeable to roots and moisture, but the firm, poorly aerated subsoil restricts the growth of roots and the movement of water. Runoff is slow, and the available water capacity is moderate.

This soil is difficult to till. It can be tilled effectively only within a narrow range of moisture content. Farming operations frequently have to be delayed, unless surface drains have been provided. If the soil is drained, the response to lime and fertilizer is good. The main crops are rice and soybeans. Cotton is grown in some areas. (Capability unit IIIw–1; woodland group 8; wildlife group 4)

Grenada Series

The Grenada series consists of dark grayish-brown to dark-brown, moderately well drained, permeable soils on

uplands. These soils formed in a thick mantle of loess. The slope range is 1 to 8 percent.

Grenada soils are on the steeper parts of ridges east of the Cache River and on escarpments above the entrenched flood plains of Bayou DeView. They are associated with but are better drained than Calloway, Calhoun, and Henry soils.

Representative profile of Grenada silt loam, 3 to 8 percent slopes, in a moist idle field in the NW¼NW¼SW¼ sec. 32, T. 7 N., R. 2 W.:

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) silt loam; weak, medium, granular structure; very friable; common roots; few, fine, dark-colored concretions; very strongly acid; abrupt, smooth boundary.

B1—5 to 9 inches, brown (10YR 4/3) silt loam; weak, medium, subangular blocky structure; friable; common roots; few, fine, dark-colored concretions; strongly acid; clear, smooth boundary.

B21t—9 to 20 inches, yellowish-brown (10YR 5/4) heavy silt loam; common, fine, faint mottles of yellowish brown and brown; weak, medium, subangular blocky structure; friable; common roots; common patchy clay films; few organic stains on peds; few, fine, dark-colored concretions; strongly acid; clear, smooth boundary.

B22t—20 to 23 inches, yellowish-brown (10YR 5/4) light silty clay loam; common, medium, distinct mottles of grayish brown; weak, medium, subangular blocky structure; friable; common roots; few patchy clay films; organic stains on some peds; common, soft and hard, medium, dark-colored concretions; medium acid; clear, smooth boundary.

A'2x—23 to 29 inches, light brownish-gray (10YR 6/2) silt loam; common, medium, distinct mottles of yellowish brown and dark yellowish brown; massive in place but breaks to weak, medium, subangular blocky structure; very friable; brittle; few roots; common pores; common, soft, dark-colored concretions; medium acid; abrupt, smooth boundary.

B'x1—29 to 35 inches, gray (10YR 5/1) silty clay loam; common, medium and fine, distinct mottles of dark brown and few, fine and medium, distinct mottles of yellowish brown; coarse polygons are massive in place but break to moderate, medium, subangular blocky structure; firm; brittle; few roots; common pores; common clay films on ped faces and lining some pores; silt coatings on polygon faces; common, soft and hard, dark-colored concretions; medium acid; clear, smooth boundary.

B'x2—35 to 45 inches, mottled grayish-brown (10YR 5/2), light brownish-gray (10YR 6/2), brown (10YR 5/3), and yellowish-brown (10YR 5/4) silty clay loam; coarse polygons breaking to moderate, medium, subangular blocky structure; friable; brittle; common pores; common clay films; vertical streaks of silt between polygons; common, soft and hard concretions; medium acid; clear, smooth boundary.

B3—45 to 52 inches +, brown (10YR 4/3) silt loam; common, medium, distinct mottles of grayish brown; moderate, medium, subangular blocky structure; firm; common pores; vertical streaks of silt on ped faces; few, fine, soft concretions; medium acid.

The Ap horizon ranges from 4 to 9 inches in thickness and from slightly acid to very strongly acid in reaction. It is dark grayish brown (10YR 4/2), dark brown (10YR 3/3 or 4/3), brown (10YR 5/3), or yellowish brown (10YR 5/4 or 5/6). The B1 horizon is yellowish brown (10YR 5/4 or 5/6) or brown (10YR 4/3 or 5/3). The B2t horizon is yellowish-brown (10YR 5/4 or 5/6) or brown (10YR 4/3 or 5/3) silt loam or silty clay loam. It is 12 to 20 inches thick. The depth to the fragipan ranges from 18 to 30 inches. The loess deposit is 4 to 7 feet thick.

Grenada silt loam, 1 to 3 percent slopes (GaB).—This soil has a 4- to 9-inch surface layer of dark grayish-brown to brown, friable silt loam. The uppermost 12 to 20 inches of the subsoil is yellowish-brown or brown, friable silt loam or silty clay loam. In the lower part of the subsoil is a friable but brittle fragipan. The upper boundary of the fragipan is at a depth of 22 to 30 inches, and the pan is more than a foot thick. A few small areas of Calloway, Henry, and Calhoun soils were included in mapping.

This soil is medium acid to strongly acid. It is moderate in natural fertility. The surface layer and the upper part of the subsoil are readily permeable to roots and moisture, but the fragipan restricts the growth of roots and the movement of water. Runoff is slow to medium, and the available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to lime and fertilizer is good. The main crops are soybeans and rice. Cotton is grown in some areas. (Capability unit IIe–2; woodland group 9; wildlife group 5)

Grenada silt loam, 3 to 8 percent slopes (GaC).—Nearly all of this soil occurs as small areas on short slopes. It has a 4- to 9-inch surface layer of dark grayish-brown or brown, friable silt loam. The uppermost 12 to 20 inches of the subsoil is yellowish-brown or brown, friable silt loam or silty clay loam. In the lower part is a friable but brittle fragipan. The upper boundary of the fragipan is at a depth of 22 to 30 inches, and the pan is a foot or more thick. A few small areas of Calloway soils and other Grenada soils were included in mapping.

This soil is medium acid to very strongly acid. The surface layer and upper part of the subsoil are readily permeable to roots and moisture, but the fragipan restricts the growth of roots and the movement of water. Runoff is medium, and the available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Small grain and pasture are suitable crops. Large amounts of fertilizer are needed. (Capability unit IIIe–2; woodland group 9; wildlife group 5)

Grenada silt loam, 3 to 8 percent slopes, eroded (GaC2).—Nearly all of this soil occurs as small areas on short slopes. It has a 4- to 7-inch surface layer of yellowish-brown or brown, friable silt loam. The uppermost 12 to 18 inches of the subsoil is yellowish-brown or brown, friable silt loam or silty clay loam. In the lower part of the subsoil is a friable but brittle fragipan. The upper boundary of the fragipan is at a depth of 18 to 26 inches, and the pan is a foot or more thick.

Most of the acreage is eroded to the extent that subsoil material is mixed with the remaining surface layer, and patches of subsoil are exposed. Rills are common after rain, and most areas have a few shallow gullies. A few small uneroded spots and a few small gullied areas were included in mapping.

This soil is medium acid to strongly acid. It is moderate in natural fertility. The surface layer and the upper part of the subsoil are readily permeable to roots and moisture, but the fragipan restricts the growth of roots and the movement of water. The available water capacity is moderate. Runoff is medium.

This soil is easy to till and can be worked throughout a wide range of moisture content. All of the acreage has been cultivated, but a large part is now idle. The response to lime and fertilizer is good. Small grain and pasture are suitable crops. Large amounts of fertilizer are needed.

(Capability unit IIIe–2; woodland group 9; wildlife group 5)

Grubbs Series

The Grubbs series consists of somewhat poorly drained, very slowly permeable soils. These soils formed in clayey sediments that had a thin layer of silt loam at the surface. They have a strong concentration of sodium in the lower part of the B horizon.

Grubbs soils are associated with Amagon, Foley, Dundee, and Alligator soils. They have a finer textured B horizon than Amagon, Foley, and Dundee soils. They are coarser textured than Alligator soils. Of the associated soils, only those of the Foley series have concentrations of sodium.

Representative profile of Grubbs silt loam, 0 to 1 percent slopes, in a moist cultivated field in the SW¼SW¼NW¼ sec. 26, T. 7 N., R. 2 W.:

Ap—0 to 6 inches, dark-brown (10YR 4/3) silt loam; weak, fine, granular structure; very friable; many fine roots; few, fine and medium, dark-colored concretions; very strongly acid; abrupt, smooth boundary.

B21t—6 to 13 inches, dark-red (2.5YR 3/6) silty clay; common, medium, prominent mottles of gray; strong, medium, angular blocky structure; very firm when moist, plastic when wet; common fine roots; continuous clay films; few, fine and medium, dark-colored concretions; very strongly acid; clear, smooth boundary.

B22t—13 to 17 inches, reddish-brown (5YR 4/4) silty clay; strong, medium, angular blocky structure; very firm when moist, plastic when wet; common fine roots; continuous clay films; silt coatings on some ped faces and in root channels and cracks; some gray clay in root channels and on some peds; few, medium and fine concretions; very strongly acid; clear, smooth boundary.

B23t—17 to 25 inches, dark grayish-brown (10YR 4/2) silty clay; strong, medium, subangular blocky structure; very firm when moist, plastic when wet; few fine roots; common patchy clay films; dark-brown coatings on ped faces; few, fine, dark-colored concretions; neutral; clear, smooth boundary.

B31t—25 to 36 inches, dark-gray (10YR 4/1) silty clay loam; common, medium, distinct mottles of dark yellowish brown and few, fine, distinct mottles of yellowish brown; moderate, medium, subangular blocky structure; firm when moist, plastic when wet; few patchy clay films; common dark-colored stains on peds; common, hard, dark-colored concretions; common cracks filled with gray silt; moderately alkaline; gradual, smooth boundary.

B32t—36 to 44 inches, dark grayish-brown (10YR 4/2) silty clay loam; common, medium, distinct mottles of gray and few, fine, distinct mottles of yellowish brown; moderate, medium, subangular blocky structure; firm when moist, slightly plastic when wet; common clay films on peds; common dark-brown coatings on ped faces; few dark-colored concretions; moderately alkaline; clear, smooth boundary.

B33t—44 to 52 inches +, gray (10YR 5/1) silt loam; common, medium, distinct mottles of dark yellowish brown and yellowish brown; moderate, medium, subangular blocky structure; friable when moist, slightly plastic when wet; continuous clay films; dark-brown coatings on some peds; common dark-colored concretions; moderately alkaline.

The Ap horizon ranges from very dark grayish brown (10YR 3/2) through dark grayish brown (10YR 4/2) to dark brown (10YR 4/3) in color and from 4 to 10 inches in thickness. It is strongly acid to very strongly acid. The B21t horizon is dark-red (2.5YR 3/6) to reddish-brown (5YR 4/3) or yellowish-brown (10YR 5/4) silty clay or clay that has common to many, medium to coarse, prominent mottles of gray (10YR 5/1) or grayish brown (10YR 5/2). It is strongly acid to very strongly acid. The B22t horizon is reddish-brown (5YR 4/4) to red (2.5YR 4/6) silty clay or clay that in some profiles has common to many mottles of gray (10YR 5/1) or grayish brown (10YR 5/2). It is strongly acid to very strongly acid. The B23t horizon is brown (7.5YR 5/4) to dark grayish-brown (10YR 4/2) silty clay or clay. It is medium acid to neutral. The B31t horizon ranges from dark-gray (10YR 4/1) to variegated brown (10YR 4/3), grayish-brown (10YR 5/2), and yellowish-brown (10YR 5/4) silty clay loam or silty clay. It is neutral to moderately alkaline. The B32t horizon is grayish brown (10YR 5/2) to dark grayish brown (10YR 4/2) and has mottles of gray (10YR 5/1) and yellowish brown (10YR 5/6). It is neutral to moderately alkaline. The B33t horizon is mottled with dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6). It is mildly alkaline to strongly alkaline.

Grubbs silt loam, 0 to 1 percent slopes (GbA).—Nearly all of this soil occurs as small areas on bottom lands. The surface layer is dark grayish-brown to brown, friable silt loam 4 to 10 inches thick. The upper part of the subsoil is reddish-brown or red silty clay or clay that is very firm when moist and plastic when wet, and the lower part is brown or reddish-brown silty clay or clay that is firm when moist and plastic when wet. The underlying material is reddish-brown, grayish-brown, gray, and yellowish-brown, firm, moderately alkaline silty clay or silty clay loam. A few small areas of Alligator, Foley, and Amagon soils were included in mapping.

Runoff is slow, and wetness is a hazard. The surface layer is readily permeable to roots and moisture, but the firm, plastic subsoil restricts the growth of roots and the movement of water. The available water capacity is moderate. The reaction is very strongly acid in the upper part of the profile and moderately alkaline in the lower part. Natural fertility is moderate.

This soil is difficult to till, and it can be tilled only within a narrow range of moisture content. Planting may have to be delayed in spring, unless surface drains have been provided. The response to lime and fertilizer is good. The main crops are soybeans and rice. Cotton is grown in some areas. (Capability unit IIIw–4; woodland group 11; wildlife group 2)

Grubbs silt loam, 1 to 3 percent slopes (GbB).—Nearly all of this soil occurs as narrow bands on escarpments. The surface layer is dark grayish-brown to brown, friable silt loam 4 to 8 inches thick. The upper part of the subsoil is reddish-brown or red, firm, plastic silty clay or clay, and the lower part is brown or reddish-brown, firm, plastic silty clay or clay, over gray, reddish-brown, grayish-brown, and yellowish-brown, firm, alkaline silty clay loam or silty clay. A few small areas of Alligator soils were included in mapping.

The surface layer is readily permeable to roots and moisture, but the firm, plastic subsoil restricts the growth of roots and the movement of water. Runoff is slow to medium, and the available water capacity is moderate. The reaction is very strongly acid in the upper part of the profile and moderately alkaline in the lower part.

This soil is difficult to till and can be tilled only within a narrow range of moisture content. The main crop is soybeans. Cotton and rice are grown in some areas. (Capability unit IIe–3; woodland group 11; wildlife group 2)

Grubbs-Foley complex (0 to 1 percent slopes) (Gf).—This complex is on wide flats along old river terraces. The soils are so closely associated and so intermingled that it was not practical to map them separately. They are about

equal in extent. A few small areas of Amagon, Dubbs, Dundee, and Lafe soils were included in mapping.

The Grubbs soil in this complex has a 4- to 10-inch surface layer of dark grayish-brown or grayish-brown, friable silt loam and a subsoil of grayish-brown, mottled, sticky heavy silty clay loam or light silty clay over grayish-brown, mottled silty clay loam. A Foley soil is described in detail under the heading "Foley Series."

The surface layer and the upper part of the subsoil are readily permeable to roots and moisture, but the firm, compact, alkaline lower part of the subsoil restricts the growth of roots and the movement of water. Runoff is very slow, and wetness is a hazard. The available water capacity is moderate to low. The surface layer and the upper part of the subsoil are strongly acid, and the lower part of the subsoil is alkaline and contains a large amount of sodium. Natural fertility is moderate.

These soils are somewhat difficult to manage. They can be worked only within a limited range of moisture content, and farming operations frequently have to be delayed, unless surface drains have been provided. The response to lime and fertilizer is good. If leveling is needed, the depth to the concentration of sodium should be determined before cuts are made. Productivity will be impaired if sodium is too near the surface. The main crops are soybeans, rice, and cotton. (Capability unit IIIw–4; woodland group 11; wildlife group 2)

Henry Series

The Henry series consists of gray to grayish-brown, poorly drained, slowly permeable soils on plains. These soils formed in a thick mantle of loess. The slope range is 0 to 1 percent.

The Henry soils in Woodruff County are on wide loessal plains east of Bayou DeView. They are adjacent to Calloway and Grenada soils. They are grayer and more poorly drained than Calloway and Grenada soils.

Representative profile of Henry silt loam, in a moist forest in the SE¼SW¼NW¼ sec. 36, T. 7 N., R. 1 W.:

A1—0 to 8 inches, grayish-brown (10YR 5/2) silt loam; common, fine, faint mottles of dark brown; weak, medium, subangular blocky structure; very friable; common roots; common fine pores; very strongly acid; clear, smooth boundary.

A2g—8 to 22 inches, gray (10YR 6/1) silt loam; common, medium, distinct mottles of yellowish brown; weak, medium, subangular blocky structure; very friable; common roots; common fine pores; few, fine, hard, dark-colored concretions; very strongly acid; clear, smooth boundary.

B1g—22 to 30 inches, gray (5Y 6/1) heavy silt loam; common, medium, distinct mottles of yellowish brown; moderate, medium, subangular blocky structure; friable; few roots; few fine pores; very strongly acid; gradual, smooth boundary.

B2tg—30 to 38 inches, gray (5Y 6/1) silty clay loam; common, medium, distinct mottles of yellowish brown; moderate, medium, angular blocky structure; firm when moist, slightly sticky when wet; few roots; few fine pores; few patchy clay films; very strongly acid; gradual, smooth boundary.

Bx1—38 to 55 inches, light brownish-gray (2.5Y 6/2) silt loam; common, medium, distinct mottles of yellowish brown and dark brown; coarse polygons breaking to moderate, medium, angular blocks; firm; brittle; few roots; common pores; polygon cracks filled with gray silt; few, soft, dark-colored concretions; very strongly acid; gradual, smooth boundary.

Bx2—55 to 66 inches, light brownish-gray (2.5Y 6/2) silty clay loam; common, medium, distinct mottles of yellowish brown; massive but weakly polygonal and breaks to moderate, medium, angular blocks; extremely firm; brittle; common pores; common patchy clay films; very strongly acid; clear, smooth boundary.

C—66 to 72 inches +, gray (10YR 6/1) silty clay loam; common, medium, distinct mottles of yellowish brown and dark brown; massive but breaks to weak, coarse, subangular blocky fragments; firm; few roots; few fine pores; dark-colored coatings in old root channels; few, soft, dark-colored concretions; strongly acid.

The A horizon ranges from gray (10YR 5/1) to grayish brown (10YR 5/2) or dark grayish brown (10YR 4/2) in color. The B1g horizon ranges from silt loam to light silty clay loam in texture and the B2tg horizon from silt loam to silty clay loam. The depth to the fragipan ranges from 28 to 40 inches. The reaction is strongly acid to very strongly acid throughout the profile.

Henry silt loam (0 to 1 percent slopes) (He).—This soil is on wide flats and in depressions. It has a 5- to 10-inch surface layer of grayish-brown, friable silt loam. The upper part of the subsoil is gray, friable silt loam mottled with yellowish brown, and the lower part is gray, firm silty clay loam mottled with yellowish brown over a firm and brittle fragipan of light brownish-gray silt loam or silty clay loam. A few small areas of Calloway and Zachary soils were included in mapping.

Above the fragipan this soil is readily permeable to roots and moisture, but the fragipan restricts the growth of roots and the penetration of moisture. Runoff is very slow to ponded, and wetness is a hazard. The available water capacity is moderate. The reaction is very strongly acid to strongly acid, and natural fertility is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Farming operations usually have to be delayed after rain, unless surface drains have been provided. The response to lime and fertilizer is good. The main crops are rice and soybeans. (Capability unit IIIw–5; woodland group 10; wildlife group 6)

Hillemann Series

The Hillemann series consists of dark grayish-brown to grayish-brown, somewhat poorly drained, slowly permeable soils that have a concentration of sodium in the lower part of the B horizon. These soils formed in a thick mantle of loess. The slope range is 0 to 1 percent.

Hillemann soils are on plains in the southeastern part of Woodruff County, chiefly east of Bayou DeView. They are adjacent to Calloway, Grenada, and Zachary soils, none of which have concentrations of sodium. Hillemann soils lack the fragipan that is characteristic of the Calloway and Grenada soils, and they are more poorly drained than Grenada soils. They are at higher elevations than the gray, poorly drained Zachary soils, which are on flood plains. Hillemann soils are intermingled with Crowley soils. They have a transitional (B1) horizon, which Crowley soils do not have; the upper part of their B horizon is less clayey than that of Crowley soils, and the lower part contains a large amount of sodium, which is lacking in Crowley soils.

The Hillemann soils in Woodruff County are mapped only as parts of two undifferentiated groups with Crowley soils. These mapping units are described under the heading "Crowley Series."

Representative profile of Hillemann silt loam, 0 to 1 percent slopes, in a moist cultivated field in the NE¼NW¼ NW¼ sec. 28, T. 5 N., R. 1 W.:

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) silt loam; weak, medium, granular structure; very friable; many fine roots; common, fine, black concretions; strongly acid; abrupt, smooth boundary.

A2—6 to 11 inches, grayish-brown (10YR 5/2) silt loam; weak, medium, angular blocky structure; friable; many, fine, hard and soft, black concretions; strongly acid; gradual, smooth boundary.

B1—11 to 21 inches, mottled light brownish-gray (10YR 6/2), light-gray (10YR 7/1), brown (10YR 5/3), and yellowish-brown (10YR 5/8) silt loam; weak, medium, subangular blocky structure; friable; common, medium, soft and hard, dark-brown concretions; strongly acid; clear, wavy boundary.

B21t—21 to 29 inches, red (2.5YR 4/6) silty clay loam; common, medium, coarse mottles of gray (10YR 6/1); moderate, medium, angular blocky structure; hard when dry, plastic when wet; few patchy clay films; few tongues of gray silt in the uppermost 1 inch to 3 inches; medium acid; gradual, wavy boundary.

B22t—29 to 36 inches, mottled brown (10YR 5/3), yellowish-brown (10YR 5/4), gray (10YR 6/1), and red (2.5YR 4/6) silty clay loam; moderate, medium, subangular blocky structure; firm when moist, slightly plastic when wet; common patchy clay films; few, fine and medium, black concretions; few black stains on ped faces; medium acid; gradual, wavy boundary.

B3—36 to 72 inches +, light-gray (10YR 7/1) silt loam; common medium and coarse mottles of yellowish brown (10YR 5/4); weak, medium, angular blocky structure; friable; compact, brittle; few dark-colored coatings on ped faces; many, fine and medium, hard and soft, dark-colored concretions; medium acid.

The Ap horizon ranges from very dark grayish brown (10YR 3/3) to grayish brown (10YR 5/2) and brown (10YR 5/3) in color. The A2 horizon is absent from some profiles, and the B1 horizon from others. The depth to the B21t horizon ranges from 15 to 24 inches. The reaction ranges from slightly acid to strongly acid in the upper part of the profile. An increase in exchangeable sodium and magnesium begins at a depth of about 20 inches. The B22t and B3 horizons contain a large amount of sodium.

Lafe Series

The Lafe series consists of dark grayish-brown to gray, poorly drained to somewhat poorly drained, very slowly permeable soils that have concentrations of sodium and magnesium in the B horizon. These soils are on old silty terraces. The slope range is 0 to 1 percent.

Lafe soils are adjacent to Dundee, Dubbs, and Amagon soils, none of which have concentrations of sodium and magnesium. They are less well drained and finer textured than Dundee and Dubbs soils. They have an alkaline B horizon instead of an acid one, as is characteristic of Dundee, Dubbs, and Amagon soils. Lafe soils are intermingled with Foley soils. They have a thicker, more strongly expressed B horizon, and strong concentrations of sodium nearer the surface than Foley soils.

In this county Lafe soils are mapped only as part of a complex with Foley soils.

Representative profile of Lafe silt loam, in a moist idle field in the NW¼NW¼NW¼ sec. 16, T. 7 N., R. 2 W.:

Ap—0 to 3 inches, brown (10YR 5/3) silt loam; weak, fine, granular structure; very friable; few roots; common, medium, hard, dark-colored concretions; strongly acid; abrupt, smooth boundary.

A2—3 to 8 inches, grayish-brown (10YR 5/2) silt loam; weak, medium, subangular blocky structure; friable; few roots; common, medium, hard, dark-colored concretions; neutral; abrupt, wavy boundary.

B21t—8 to 13 inches, dark grayish-brown (10YR 4/2) silty clay loam; common, medium, distinct mottles of gray; moderate, medium, subangular blocky structure; firm when moist, sticky when wet; few roots; few patchy clay films; streaks of silt between some peds; common, medium, hard, dark-colored concretions; moderately alkaline; abrupt, wavy boundary.

B22t—13 to 27 inches, variegated dark grayish-brown (10YR 4/2), grayish-brown (10YR 5/2), and yellowish-brown (10YR 5/4) silty clay loam; moderate, medium, subangular blocky structure; very firm; common patchy clay films; silt coatings on ped faces; common, medium, hard and soft concretions; moderately alkaline; abrupt, wavy boundary.

B23—27 to 39 inches, variegated dark grayish-brown (10YR 4/2), grayish-brown (10YR 5/2), and yellowish-brown (10YR 5/6) light silty clay loam; massive in place but breaks to moderate, medium, subangular blocky structure; very firm; streaks of silt on ped faces; common, medium, hard and soft, dark-colored concretions; common nodules of calcium carbonate; moderately alkaline; clear, smooth boundary.

C—39 to 52 inches, dark grayish-brown (10YR 4/2) loam; common, medium, distinct mottles of dark yellowish brown; massive but breaks to moderate, medium, subangular blocky fragments; firm; brittle; common, soft and hard, dark-colored concretions; moderately alkaline.

The Ap horizon ranges from 3 to 6 inches in thickness and from strongly acid to alkaline in reaction. It is gray (10 YR 5/1), grayish brown (10YR 5/2), dark grayish brown (10YR 4/2), or brown (10YR 5/3). Some profiles lack an A2 horizon. The B21t horizon is dark grayish-brown (10YR 4/2), gray (10YR 5/1), or pale-brown (10YR 6/3) loam, clay loam, or silty clay loam. In places the lower part of the B horizon lacks nodules of calcium carbonate. The B and C horizons are moderately alkaline to strongly alkaline.

Lafe-Foley silt loams (0 to 1 percent slopes) (lf).—The soils in this complex occur as small level areas or slightly depressed areas on old terraces. They are so intermingled that it was not practical to map them separately. Lafe silt loam makes up 60 to 80 percent of each area. A few small spots of Grenada soils were included in mapping.

The Lafe soil has a 3- to 8-inch surface layer of dark grayish-brown to gray, friable silt loam. The upper part of the subsoil is dark grayish-brown to gray, mottled, very firm, alkaline silty clay loam, and the lower part is firm, alkaline silty clay loam mottled with dark grayish brown, grayish brown, and yellowish brown. Foley silt loam is described under the heading "Foley Series."

Runoff is slow to ponded. The extremely firm, alkaline layers are not generally permeable to roots and moisture. The available water capacity is very low to moderate. Natural fertility is low to moderate.

The strong concentrations of salts in the subsoil are a severe limitation. Because the salts are within a few inches of the surface in most places, these soils should not be leveled. The response to lime and fertilizer is poor to moderate. Soybeans and cotton can grow on some spots of the Foley soil, but in general this complex is not suitable for crops. (Capability unit VIs–1; woodland group 12; wildlife group 7)

McCrory Series

The McCrory series consists of poorly drained, dark grayish-brown loamy soils on alluvial terraces. These soils have a large amount of sodium in the lower part of the B horizon.

McCrory soils occur in broad level areas or depressions. They are associated with Foley, Grubbs, Amagon, and Tuckerman soils. They are sandier than Foley, Grubbs, and Amagon soils. McCrory soils are alkaline and high in sodium in the lower part of the B horizon, whereas Amagon and Tuckerman soils are acid throughout.

Representative profile of McCrory fine sandy loam, in a moist wooded area in the SE¼NE¼SW¼ sec. 24, T. 7 N., R. 2 W.:

A1—0 to 3 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; common fine and medium roots; few, medium, hard, dark-colored concretions; very strongly acid; clear, smooth boundary.

A2—3 to 10 inches, grayish-brown (10YR 5/2) fine sandy loam; common, fine, faint mottles of yellowish brown; weak, medium, subangular blocky structure; very friable; common medium and fine roots; few, fine, hard, dark-colored concretions; very strongly acid; clear, smooth boundary.

B1g—10 to 15 inches, gray (10YR 5/1) fine sandy loam; common, medium, distinct mottles of yellowish brown; weak, medium, subangular blocky structure; friable; common roots; few, fine, hard, dark-colored concretions; very strongly acid; clear, wavy boundary.

B21tg—15 to 27 inches, grayish-brown (10YR 5/2) sandy clay loam; weak, medium, subangular blocky structure; firm; common fine roots; some ped faces coated with gray sandy material; few patchy clay films; few, medium, soft and hard concretions; strongly acid; clear, wavy boundary.

B22tg—27 to 34 inches, grayish-brown (10YR 5/2) sandy clay loam; common, medium, faint mottles of gray and few, fine, distinct mottles of yellowish brown; weak, medium, subangular blocky structure; firm; few fine roots; few patchy clay films; some black stains on ped faces; few, fine, dark-colored concretions; neutral; clear, wavy boundary.

B3g—34 to 43 inches, gray (10YR 6/1) fine sandy loam; common, fine, distinct mottles of yellowish brown and dark yellowish brown; weak, medium, subangular blocky structure; friable; slightly brittle; few fine roots; common black stains on ped faces; common, coarse and medium, soft concretions; mildly alkaline; gradual, wavy boundary.

Cg—43 to 52 inches +, gray (10YR 6/1) loamy fine sand; single grain (structureless); loose; few fine concretions; moderately alkaline.

In cultivated areas the Ap horizon is dark grayish-brown fine sandy loam or loam 3 to 8 inches thick, and the A2 horizon is grayish-brown fine sandy loam 2 to 7 inches thick. The B horizon is gray (10YR 5/1 or 6/1), grayish-brown (10YR 5/2), or dark-gray (10YR 4/1) heavy fine sandy loam to sandy clay loam mottled with shades of yellow or brown. The structure of the B horizon appears massive, but it is prismatic and breaks to subangular blocky. The depth to the natric horizon is 24 to 32 inches. Above this horizon the reaction is medium acid to extremely acid; within it the reaction is slightly alkaline to moderately alkaline. The natric horizon generally has few to common black stains on ped faces and few to common lime concretions. The C horizon is gray to grayish-brown fine sand to fine sandy loam and is structureless—single grain if coarser textured and massive if finer textured.

McCrory complex (0 to 1 percent slopes) (Mc).—The soils in this complex are so intermingled that it was not practical to map them separately. McCrory fine sandy loam and loam make up 60 to 85 percent of the areas. Foley, Amagon, and Tuckerman soils each make up 5 to 15 percent. A few small spots of Dubbs and Dundee soils were included in mapping.

McCrory soils have a surface layer of dark grayish-brown fine sandy loam or loam 4 to 10 inches thick. The upper part of the subsoil is grayish-brown to gray, friable fine sandy loam or loam to a depth of 15 to 25 inches. The lower part is grayish-brown to gray, firm, compact clay loam or sandy clay loam.

The available water capacity is low to moderate. The upper part of the subsoil is readily permeable to roots and water, but the alkaline lower part is slowly permeable in most places. Natural fertility is moderate. Runoff is very slow, and wetness is a moderate to severe hazard.

These soils are easy to till and can be worked throughout a wide range of moisture content, but farming operations are often delayed, unless surface drainage has been provided. The response to lime and fertilizer is good. If land leveling is necessary, the depth to sodium should be determined before cuts are made, because productivity will be impaired if sodium is too near the surface. The main crops are soybeans and cotton. (Capability unit IIIw–2; woodland group 11; wildlife group 2)

Mhoon Series

The Mhoon series consists of very dark grayish-brown to dark-gray, poorly drained, slowly permeable soils on flood plains. These soils formed in alluvium. The slope range is 0 to 1 percent.

The Mhoon soils in Woodruff County are in level areas or depressions on the young flood plains of the White River and the Cache River. They are adjacent to Bowdre, Commerce, Dubbs, Dundee, Amagon, and Sharkey soils. Mhoon soils are more poorly drained than Bowdre, Commerce, Dubbs, and Dundee soils. They are less acid than Dubbs, Dundee, and Amagon soils, and they have a stratified B horizon. Mhoon soils are coarser textured than Sharkey soils.

Representative profile of Mhoon fine sandy loam, in a moist wooded area in the NW¼NW¼SE¼ sec. 8, T. 8 N., R. 3 W.:

A1–0 to 5 inches, dark-gray (10YR 4/1) fine sandy loam; weak granular structure; very friable; many roots; neutral; clear, wavy boundary.

B1g—5 to 15 inches, grayish-brown (10YR 5/2) very fine sandy loam; common, medium, prominent mottles of dark brown; massive; loose; common roots; neutral; abrupt, wavy boundary.

B2g—15 to 24 inches, dark-gray (N 4/0) very fine sandy clay loam; common, medium, distinct mottles of very dark brown; massive; friable; common roots; neutral; gradual, wavy boundary.

B3g—24 to 52 inches +, dark-gray (N 4/0) fine sandy loam; common, medium, distinct mottles of very dark brown; massive; friable; common roots; neutral.

The A horizon ranges from 5 to 9 inches in thickness. It is very dark grayish-brown (10YR 3/2), dark-gray (10YR 4/1), or very dark gray (10YR 3/1) fine sandy loam or sandy clay loam. The reaction is slightly acid to neutral. The B horizon is composed of thin strata of several different textures, in no regular order. In color, this horizon is grayish brown (10YR 5/2), dark gray (10YR 4/1 or N 4/0), or gray (10YR 5/1), with mottles of very dark brown (10YR 2/2) to yellowish brown (10YR 5/6). The reaction is slightly acid to mildly alkaline.

Mhoon fine sandy loam (0 to 1 percent slopes) (Mh).—Nearly all of this soil occurs in narrow depressions along streams that flood occasionally. The surface layer is dark-gray fine sandy loam. It is 4 to 10 inches thick but most commonly about 5 inches. The subsoil is gray or dark-gray, stratified fine sandy loam, loam, silt loam, silty clay loam, or clay loam mottled with dark brown. In places it con-

tains thin layers of loamy sand or silty clay or clay. A few small areas of Commerce, Bowdre, and Sharkey soils were included in mapping.

This soil is readily permeable to roots and moisture. Runoff is slow or ponded. The available water capacity is moderate. The reaction is slightly acid to mildly alkaline. Natural fertility is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Farming operations commonly have to be delayed, unless surface drains have been provided. The response to fertilizer is good. The main crop is soybeans. Cotton is grown in some areas. (Capability unit IIw–2; woodland group 4; wildlife group 3)

Mhoon sandy clay loam (0 to 1 percent slopes) (Mn).—Nearly all of this soil is in narrow depressions along streams that flood occasionally. The surface layer is very dark grayish-brown sandy clay loam. It is 5 to 10 inches thick but commonly about 7 inches. The subsoil is dark-gray, firm sandy clay loam underlain by very dark gray, firm, plastic sandy clay. In places the subsoil consists of thin strata of sandy and clayey sediments, in no regular pattern. A few small areas of Commerce, Bowdre, and Sharkey soils were included in mapping.

This soil is readily permeable to roots and moisture. Runoff is slow or ponded, and the available water capacity is moderate. The reaction is slightly acid to mildly alkaline, and natural fertility is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Farming operations commonly have to be delayed, unless surface drains have been provided. The response to fertilizer is good. The main crop is soybeans. Cotton is grown in some areas. (Capability unit IIIw–1; woodland group 4; wildlife group 3)

Patterson Series

The Patterson series consists of dark-gray to dark grayish-brown, poorly drained, slowly permeable soils in low areas and in former stream channels adjoining the natural levees. These soils formed in sandy sediments. The slope range is 0 to 3 percent.

Patterson soils are associated with Bruno, Beulah, Bosket, Dubbs, Dundee, and Tuckerman soils. They are more poorly drained than Bruno soils. They are sandier and more poorly drained than Beulah, Bosket, Dubbs, and Dundee soils. Patterson soils are coarser textured than Tuckerman soils, which have a moderately developed B horizon.

Representative profile of Patterson loamy fine sand, 0 to 1 percent slopes, in a moist cultivated field in the NE¼SE¼NW¼ sec. 4, T. 8 N., R. 3 W.:

Ap—0 to 9 inches, dark grayish-brown (10YR 4/2) loamy fine sand; weak, fine, granular structure; very friable; many roots; very strongly acid; clear, smooth boundary.

Bt—9 to 19 inches, dark grayish-brown (10YR 4/2) fine sandy loam; massive in place but breaks to weak, fine, granular structure; very friable; common roots; few pores; common clay bridgings between sand grains; few, fine, dark-colored concretions; very strongly acid; gradual, wavy boundary.

C1g—19 to 32 inches, grayish-brown (10YR 5/2) loamy fine sand; massive but breaks to weak, medium, granular structure; very friable; common roots; common pores; few, hard, fine, dark-colored concretions; very strongly acid; gradual, wavy boundary.

C2g—32 to 52 inches +, grayish-brown (10YR 5/2) loamy fine sand; common, fine, faint mottles of light gray; massive; very friable; few roots; common pores; few, small, hard, dark-colored concretions; very strongly acid.

The Ap horizon ranges from dark gray (10YR 4/1) to dark grayish brown (10YR 4/2) in color and from 4 to 9 inches in thickness. The Bt horizon is dark grayish-brown (10YR 4/2) to grayish-brown (10YR 5/2) fine sandy loam to loamy fine sand. The C1g horizon ranges from dark gray (10YR 4/1) to grayish brown (10YR 5/2) in color and from fine sandy loam to loamy sand in texture. The C2g horizon ranges from gray (10YR 5/1) to dark grayish brown (10YR 4/2) in color and from fine sandy loam to loamy sand in texture. The reaction is strongly acid to very strongly acid throughout the profile.

Patterson loamy fine sand, 0 to 1 percent slopes (PaA).—This soil has a 4- to 9-inch surface layer of dark grayish-brown or grayish-brown, friable fine sandy loam or loamy fine sand and a 7- to 15-inch subsoil of grayish-brown or dark grayish-brown fine sandy loam. The underlying material is grayish-brown, gray, or dark-gray loamy fine sand mottled with light gray. A few small areas of Beulah and Tuckerman soils were included in mapping.

This soil is readily permeable to roots and moisture. Runoff is slow, and the available water capacity is moderately low. The reaction is strongly acid to very strongly acid, and natural fertility is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Farming operations commonly have to be delayed, unless surface drains have been provided. The response to lime and fertilizer is good. The main crops are soybeans and cotton. (Capability unit IIIw–2; woodland group 8; wildlife group 3)

Patterson loamy fine sand, gently undulating (0 to 3 percent slopes) (PaU).—This soil has a 4- to 9-inch surface layer of dark grayish-brown or grayish-brown, friable fine sandy loam or loamy fine sand and a 7- to 15-inch subsoil of grayish-brown or dark grayish-brown fine sandy loam. The underlying material is grayish-brown, gray, or dark-gray loamy fine sand mottled with light gray. A few small areas of Beulah and Tuckerman soils were included in mapping.

This soil is readily permeable to roots and moisture. Runoff is slow, and excess water collects in swales. The available water capacity is moderately low. The reaction is strongly acid to very strongly acid, and natural fertility is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Farming operations commonly have to be delayed, unless surface drains have been provided. The response to lime and fertilizer is good. The main crop is soybeans. Cotton is grown in some small areas. (Capability unit IIIw–2; woodland group 8; wildlife group 3)

Robinsonville Series

The Robinsonville series consists of dark-brown, well-drained, permeable soils. These soils formed in stratified young alluvium.

Robinsonville soils occur on natural levees along the White River. They are adjacent to Commerce, Bowdre, Mhoon, and Sharkey soils. Robinsonville soils are better drained than Commerce and Bowdre soils, and they lack gray mottles. They are better drained and coarser textured

than Mhoon and Sharkey soils, and they are brown in the subsoil instead of gray.

Representative profile of Robinsonville fine sandy loam, in a moist cultivated field in the SE¼SE¼NW¼ sec. 13, T. 9 N., R. 4 W.:

Ap—0 to 7 inches, dark-brown (7.5YR 3/2) fine sandy loam; weak, fine, granular structure; very friable; many roots; slightly acid; clear, wavy boundary.

C1—7 to 28 inches, dark-brown (7.5YR 3/2) fine sandy loam; massive in place but breaks to weak, medium, subangular blocks; very friable; common roots; few streaks of gray that disappear when wet; slightly acid; gradual, wavy boundary.

C2—28 to 41 inches, dark-brown (7.5YR 3/2) fine sandy loam; common, fine, faint mottles of dark grayish brown; massive in place but breaks to weak, medium, subangular blocks; friable; common roots; slightly acid; gradual, wavy boundary.

C3—41 to 52 inches +, dark-brown (10YR 3/3) fine sandy loam; common, medium, faint mottles of dark grayish brown; massive in place but breaks to weak, medium, subangular blocks; friable; few roots; slightly acid.

The A horizon ranges from very dark grayish brown (10YR 3/2) or dark brown (7.5YR 3/2) to brown (10YR 4/3) in color and from 4 to 8 inches in thickness. The C horizon is brown (10YR 4/3) through dark grayish-brown (10YR 4/2) to dark-brown (7.5YR 3/2) fine sandy loam, loam, or silt loam and has a few lenses of contrasting texture. In places the C3 horizon has mottles of dark grayish brown (10YR 4/2). The reaction is slightly acid to neutral throughout the profile.

Robinsonville fine sandy loam (0 to 1 percent slopes) (Ro).—This soil has a surface layer of dark-brown, very dark grayish-brown, brown, or dark grayish-brown, friable fine sandy loam. The underlying material is dark-brown or brown fine sandy loam or loam over dark-brown or brown fine sandy loam, loam, or sandy clay loam mottled with dark grayish brown. A few small areas of Commerce and Bowdre soils were included in mapping.

This soil is slightly acid to neutral. It is high in natural fertility. It is readily permeable to roots and moisture. Runoff is slow, and the available water capacity is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. The response to fertilizer is good. The main crops are soybeans and cotton. (Capability unit I–1; woodland group 1; wildlife group 1)

Sharkey Series

The Sharkey series consists of dark-gray to very dark grayish-brown, poorly drained, very slowly permeable soils in slack-water areas. These soils formed in thick beds of clayey alluvium. The slope range is 0 to 3 percent.

Sharkey soils occur on the flood plains of the White River and the Cache River. They are associated with Mhoon, Commerce, Bowdre, and Robinsonville soils. Sharkey soils are finer textured than Mhoon soils. They are more poorly drained and finer textured than Commerce, Bowdre, and Robinsonville soils, all of which formed in young, stratified sediments.

Representative profile of Sharkey silty clay loam, 0 to 1 percent slopes, in a moist wooded area in the NW¼NW¼NE¼ sec. 2, T. 8 N., R. 4 W.:

A1—0 to 6 inches, very dark grayish-brown (10YR 3/2) silty clay loam; moderate, medium, subangular blocky structure; friable when moist, sticky and plastic when wet; common roots; common worm casts; slightly acid; clear, smooth boundary.

C1g—6 to 12 inches, dark-gray (10YR 4/1) silty clay; common, fine, faint mottles of very dark grayish brown; moderate, medium, subangular blocky structure; firm when moist, sticky and plastic when wet; common roots; few, fine, soft, dark-colored concretions; common worm channels; slightly acid; gradual, smooth boundary.

C2g—12 to 20 inches, dark-gray (10YR 4/1) silty clay; common, medium, distinct mottles of dark yellowish brown and few, fine, faint mottles of yellowish brown; moderate, medium, angular blocky structure; firm when moist, sticky and plastic when wet; common roots; few, medium, soft, dark-colored concretions; common worm tunnels; slightly acid; gradual, smooth boundary.

C3g—20 to 36 inches, dark-gray (10YR 4/1) clay; common, medium, distinct mottles of dark brown; moderate, fine, angular blocky structure; firm when moist, sticky and plastic when wet; common roots; common, medium, soft and hard, dark-colored concretions; slightly acid; gradual, smooth boundary.

C4g—36 to 52 inches +, dark-gray (10YR 4/1) clay; common, medium, distinct mottles of dark brown; moderate, fine, angular blocky structure; firm when moist, sticky and plastic when wet; common, medium, soft and hard, dark-colored concretions; slightly acid.

The A horizon is dark-gray (10YR 4/1) to very dark grayish-brown (10YR 3/2) silty clay loam or clay. The Cg horizon is gray (10YR 5/1) to dark-gray (10YR 4/1) silty clay or clay. The reaction is slightly acid to neutral throughout the profile.

Sharkey clay, 0 to 1 percent slopes (ShA).—This soil is occasionally flooded where it is not protected by levees. The surface layer is dark-gray or very dark grayish-brown, firm, sticky clay, and the underlying material is dark-gray or gray, firm, plastic clay. A few small areas of Commerce and Bowdre soils were included in mapping.

This soil is very slowly permeable to roots and moisture. Runoff is slow to ponded (fig. 3), and the available water capacity is high. The reaction is slightly acid to neutral, and natural fertility is high.

This soil is difficult to till. It can be tilled only within a narrow range of moisture content. Farming operations commonly have to be delayed, unless drainage has been provided. The response to fertilizer is good. The main crops

Figure 3.—**Ponded water late in spring on Sharkey clay, 0 to 1 percent slopes.**

are soybeans, rice, and cotton. (Capability unit IIIw–1; woodland group 5; wildlife group 4)

Sharkey clay, gently undulating (0 to 3 percent slopes) (ShU).—This soil is occasionally flooded where it is not protected by levees. It has a surface layer of dark-gray or very dark grayish-brown, firm, sticky clay and a subsoil of dark-gray or gray, firm, plastic clay. A few small areas of Commerce and Bowdre soils were included in mapping.

This soil is very slowly permeable to roots and moisture. Runoff is slow or ponded, and the available water capacity is high. The reaction is slightly acid to neutral, and natural fertility is high.

This soil is difficult to till. It can be tilled only within a narrow range of moisture content, and farming operations commonly have to be delayed, unless drainage has been provided. The response to fertilizer is good. The main crops are soybeans and cotton. (Capability unit IIIw–1; woodland group 5; wildlife group 4)

Sharkey silty clay loam, 0 to 1 percent slopes (SkA).—This soil is occasionally flooded where it is not protected by levees. It has a surface layer of dark-gray or very dark grayish-brown, firm, sticky silty clay loam and a subsoil of dark-gray or gray, firm, plastic clay or silty clay. A few small areas of Bowdre and Commerce soils were included in mapping.

This soil is very slowly permeable to roots and moisture. Runoff is slow to ponded, and the available water capacity is high. The reaction is slightly acid to neutral, and natural fertility is high.

This soil is difficult to till. It can be tilled effectively only within a narrow range of moisture content. Farming operations commonly have to be delayed, unless drainage has been provided. The response to fertilizer is good. The main crops are soybeans, cotton, and rice. (Capability unit IIIw–1; woodland group 4; wildlife group 4)

Sharkey silty clay loam, gently undulating (0 to 3 percent slopes) (SkU).—This soil is occasionally flooded where it is not protected by levees. It has a surface layer of dark-gray or very dark grayish-brown, firm, sticky silty clay loam and a subsoil of dark-gray or gray, firm, plastic clay. A few small areas of Commerce and Bowdre soils were included in mapping.

This soil is very slowly permeable to roots and moisture. Runoff is slow to ponded, and the available water capacity is high. The reaction is slightly acid to neutral, and natural fertility is high.

This soil is difficult to till. It can be tilled effectively only within a narrow range of moisture content. Farming operations commonly have to be delayed, unless drainage has been provided. The response to fertilizer is good. The main crops are soybeans and cotton. (Capability unit IIIw–1; woodland group 4; wildlife group 4)

Sharkey and Mhoon soils (0 to 3 percent slopes) (Sm).—The soils in this undifferentiated group occur on the banks of the river, between the channel and the levees, and are flooded frequently. A dense, tangled growth of trees and vines and a lack of roads, trails, and landmarks make it impractical to map them separately. The Sharkey soil is dominant in all the areas mapped, the Mhoon soil makes up as much as 35 percent of some areas but is lacking in other areas. The native vegetation consists of water-tolerant hardwoods.

The Sharkey soil has a surface layer of very dark grayish-brown or dark grayish-brown silty clay loam or clay and a subsoil of gray or dark-gray silty clay or clay. A Mhoon soil is described under the heading "Mhoon Series."

These soils are flooded so frequently that they are not suitable for any regular use except timber production. Most of the acreage is woodland. (Capability unit Vw–1; woodland group 4; wildlife group 4)

Tuckerman Series

The Tuckerman series consists of gray to dark grayish-brown, poorly drained, slowly permeable soils in depressions and abandoned stream channels. These soils formed in loamy sediments deposited by major streams. The slope range is 0 to 1 percent.

Tuckerman soils are associated with but are grayer in the subsoil and more poorly drained than Beulah, Bosket, Bruno, Dundee, and Dubbs soils. They are finer textured than Bruno soils.

Representative profile of Tuckerman fine sandy loam, in a moist cultivated field in the SW¼NW¼SW¼ sec. 10, T. 7 N., R. 2 W.:

Ap—0 to 9 inches, dark grayish-brown (10YR 4/2) fine sandy loam; massive; very friable; common roots; few, fine, hard, dark-colored concretions; very strongly acid; abrupt, smooth boundary.

B1g—9 to 18 inches, gray (10YR 6/1) fine sandy loam; few, medium, distinct mottles of yellowish brown; weak, fine, subangular blocky structure; very friable; common roots; few, fine, hard, dark-colored concretions; very strongly acid; gradual, smooth boundary.

B2tg—18 to 34 inches, gray (10YR 6/1) sandy clay loam; common, medium, distinct mottles of dark yellowish brown; moderate, medium, subangular blocky structure; firm; few roots; few patchy clay films; few, fine, hard, dark-colored concretions; very strongly acid; gradual, smooth boundary.

Cg—34 to 52 inches +, gray (10YR 6/1) fine sandy loam; common, medium, distinct mottles of yellowish brown and dark yellowish brown; weak, medium, subangular blocky structure; friable; few, hard, dark-colored concretions; very strongly acid.

The A horizon is gray (10YR 5/1), grayish brown (10YR 5/2), or dark grayish brown (10YR 4/2) in color, and the B and C horizons are gray (10YR 6/1) to dark gray (10YR 4/1). The reaction is strongly acid to very strongly acid throughout the profile.

Tuckerman fine sandy loam (0 to 1 percent slopes) (Tu).—This soil occurs as narrow bands in depressions and old filled stream channels. It has a surface layer of gray, dark grayish-brown, or grayish-brown, friable fine sandy loam. The thickness of the surface layer ranges from 6 to 15 inches but is commonly about 9 inches. The upper part of the subsoil is gray fine sandy loam mottled with yellowish brown, and the lower part is gray sandy clay loam mottled with yellowish brown. The underlying material is gray fine sandy loam mottled with yellowish brown. A few small areas of Dundee, Amagon, and McCrory soils were included in mapping.

This soil is readily permeable to roots and moisture. Runoff is slow to ponded, and the available water capacity is moderate. The reaction is strongly acid to very strongly acid, and natural fertility is low to moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Farming operations commonly have to be delayed, unless surface drains have been provided. The response to lime and fertilizer is good. The

main crop is soybeans. Cotton is grown in some areas. (Capability unit IIIw–2; woodland group 8; wildlife group 3)

Zachary Series

The Zachary series consists of gray to very dark grayish-brown, poorly drained, slowly permeable soils on flats or in depressions of the flood plains. These soils formed in silty sediments derived from loess. The slope range is 0 to 1 percent.

Zachary soils are along streams throughout the loessal area in the eastern part of Woodruff County. They are associated with Calloway and Henry soils, which are at higher elevations. Zachary soils are more poorly drained than Calloway soils, and they lack the fragipan that is characteristic of Henry soils.

Representative profile of Zachary silt loam, in a moist wooded area in the NW¼NW¼SW¼ sec. 28, T. 5 N., R. 1 W.:

A1—0 to 6 inches, very dark grayish-brown (10YR 3/2) silt loam; weak, fine, granular structure; very friable; many roots; few, fine, hard, dark-colored concretions; very strongly acid; abrupt, wavy boundary.

A21—6 to 16 inches, dark-gray (10YR 4/1) silt loam; common, medium, distinct mottles of dark brown and yellowish brown; massive but breaks to moderate, medium, subangular blocks; very friable; common roots; common, fine and medium, hard, dark-colored concretions; very strongly acid; clear, wavy boundary.

A22—16 to 25 inches, light brownish-gray (10YR 6/2) silt loam; common, medium, distinct mottles of yellowish brown and few, fine, distinct mottles of dark brown; massive but breaks to moderate, medium, subangular blocks; very friable; few roots; many pores; common, soft, dark-colored concretions; strongly acid; abrupt, wavy boundary.

B2t—25 to 52 inches +, dark-gray (10YR 4/1) silty clay loam; common, fine, distinct mottles of yellowish brown and common, medium, faint mottles of very dark gray; few irregular masses of very dark grayish-brown (10YR 3/2) silty clay; massive but breaks to moderate, medium, subangular blocks; firm when moist, sticky and slightly plastic when wet; few fine roots; white silt in crevices; common, medium, hard, dark-colored concretions; strongly acid.

The A horizon ranges from gray (10YR 5/1) to very dark grayish brown (10YR 3/2) in color and from silt loam to silty clay loam in texture. The B2t horizon is gray (10YR 5/1) to dark gray (10YR 4/1), and the depth to this horizon ranges from 20 to 36 inches. The reaction is strongly acid to very strongly acid throughout the solum.

Zachary silt loam (0 to 1 percent slopes) (Za).—This soil is flooded fairly frequently, mainly in winter. It has a surface layer of gray, dark gray, very dark gray, or very dark grayish-brown, very friable silt loam and a subsoil of gray, dark gray, or very dark gray silt loam. A few small areas of Henry soils were included in mapping.

The subsoil is readily permeable to roots and moisture. Runoff is slow, and the available water capacity is moderate. The reaction is strongly acid to very strongly acid, and natural fertility is moderate.

This soil is easy to till and can be worked throughout a wide range of moisture content. Farming operations usually have to be delayed, unless drainage has been provided. The response to lime and fertilizer is good. Most areas are wooded, but if the soil is cleared, drained, and protected from flooding, soybeans and rice can be grown. (Capability unit IIIw–2, woodland group 5, wildlife group 6 if protected from flooding; capability unit Vw–1, woodland group 5, and wildlife group 6 if not protected from flooding)

Zachary silty clay loam (0 to 1 percent slopes) (Zc).—This soil has a surface layer of gray, dark gray, or very dark grayish-brown, friable silty clay loam and a subsoil of gray, dark gray, or very dark gray silt loam. Most areas are flooded frequently, mainly in winter. A few small areas of Zachary silt loam and Henry soils were included in mapping.

The subsoil is readily permeable to roots and moisture. Runoff is slow to ponded, and the available water capacity is moderate. The reaction is strongly acid to very strongly acid, and natural fertility is moderate.

This soil is fairly easy to till and can be worked within a moderate range of moisture content. Farming operations usually have to be delayed, unless drainage has been provided. The response to lime and fertilizer is good. Most areas are wooded, but if the soil is cleared, drained, and protected from flooding, soybeans and rice can be grown. (Capability unit Vw–1; woodland group 5; wildlife group 6)

Use and Management of the Soils

This section explains the system of capability grouping used by the Soil Conservation Service and discusses the management of the soils in Woodruff County for crops and pasture, for woodland, for wildlife habitat, and for engineering works and other nonfarm uses.

Capability Groups of Soils

Capability classification is the grouping of soils to show, in a general way, their suitability for most kinds of farming. It is a practical classification based on the limitations of the soils, the risk of damage when they are used for the ordinary field crops or sown pasture, and the way they respond to treatment. The classification does not apply to most horticultural crops or to rice and other crops that have special requirements. The soils are classified according to degree and kind of permanent limitation, without consideration of major and generally expensive land-forming that would change the slope, depth, or other characteristics of the soils, and without consideration of possible but unlikely major reclamation projects.

In the capability system, all kinds of soils are grouped at three levels: the capability class, the subclass, and the unit.

Capability Classes, the broadest groupings, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

Class I. Soils have few limitations that restrict their use.

Class II. Soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.

Class III. Soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV. Soils have very severe limitations that restrict the choice of plants, require very careful management, or both. (There are no class IV soils in this county.)

Class V. Soils are subject to little or no erosion but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife food and cover.

Class VI. Soils have severe limitations that make them generally unsuitable for cultivation and limit their use largely to pasture, range, woodland, or wildlife food and cover.

Class VII. Soils have very severe limitations that make them unsuitable for cultivation and that restrict their use largely to pasture, range, woodland, or wildlife food and cover. (There are no class VII soils in this county.)

Class VIII. Soils and landforms have limitations that preclude their use for commercial production of plants and restrict their use to recreation, wildlife, or water supply, or to esthetic purposes. (There are no class VIII soils in this county.)

CAPABILITY SUBCLASSES are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only subclasses indicated by *w*, *s*, and *c*, because the soils in it are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, woodland, wildlife, or recreation.

CAPABILITY UNITS are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe–2 or IIIw–2. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within the subclass.

Management by Capability Units

In the following pages each of the capability units in Woodruff County is described, and suggestions for the use and management of the soils in each unit are given. The names of soil series represented are mentioned in the description of each unit, but this does not mean that all the soils of a given series are in the unit. The capability classification of each individual soil is given in the "Guide to Mapping Units."

Capability unit I–1

This unit consists of well-drained to somewhat poorly drained soils on bottom lands. These soils are members of the Bosket, Dubbs, Dundee, and Robinsonville series. They have a surface layer of friable fine sandy loam or silt loam 4 to 18 inches thick. The subsoil is fine sandy loam, clay loam, sandy clay loam, or silty clay loam.

Infiltration and permeability are moderate to moderately rapid. The available water capacity is moderate. The content of organic matter is medium. Natural fertility is moderate to high, and the reaction is neutral to very strongly acid.

These soils are suited to cotton, soybeans, corn, oats, and wheat. They are well suited to dallisgrass, bermudagrass, and tall fescue and to vetch, crimson clover, white clover, lespedeza, and Austrian Winter peas. Okra, green beans, lima beans, tomatoes, strawberries, and other truck crops grow well on them. Pecan, hickory, oak, cottonwood, and sweetgum are suitable trees.

If properly fertilized and tilled, these soils can be used continuously for cultivated crops that leave a large amount of residue. They are suitable for irrigation (fig. 4).

Capability unit IIe–1

This unit consists of somewhat poorly drained to somewhat excessively drained, nearly level to gently undulating soils on natural levees. These soils are in the Beulah, Bosket, Dubbs, and Dundee series. They have a surface layer of friable fine sandy loam, sandy loam, or silt loam 4 to 18 inches thick. Their subsoil is fine sandy loam, sandy clay loam, or silty clay loam.

Permeability and infiltration are moderate to moderately rapid, except where there is a plowsole. The available water capacity is low to high. The organic-matter content is medium to low. Natural fertility is low to high, and the reaction is slightly acid to very strongly acid.

These soils are well suited to cotton, soybeans, small grain, corn, okra, lima beans, green beans, tomatoes, and strawberries. Vetch, crimson clover, white clover, and Austrian Winter peas are suitable winter legumes. Bermudagrass, dallisgrass, tall fescue, and lespedeza are well-suited pasture plants. Trees that grow well are pecan, cottonwood, oak, hickory, and sweetgum.

Figure 4.—**Land leveling for border irrigation on Dundee silt loam, 0 to 1 percent slopes, which is in capability unit I–1.**

If cultivated across the slope, these soils can be used year after year for clean-tilled crops that leave a large amount of residue. Close-growing crops that leave a large amount of residue can be grown year after year without special attention to row direction.

These soils are easy to till. Where excess water collects in depressions, an artificial drainage system is necessary. Sprinkler irrigation is suitable. The less steep areas can be leveled and then irrigated by flooding.

Capability unit IIe–2

This unit consists of Grenada silt loam, 1 to 3 percent slopes, a moderately well drained soil that has a fragipan. The surface layer of this soil is friable and about 6 inches thick. The upper part of the subsoil is friable silt loam, and the lower part is firm silty clay loam. A fragipan begins at a depth of about 20 inches.

Infiltration is moderate, permeability is slow, and the available water capacity is moderate. The organic-matter content is low. Natural fertility is moderate, and the reaction is medium acid to strongly acid.

This soil is suited to cotton, soybeans, and small grain. Vetch, Austrian Winter peas, white clover, sericea lespedeza, annual lespedeza, and crimson clover are well-suited legumes. Bermudagrass, dallisgrass, and tall fescue are the most suitable grasses. Pecans, peaches, okra, green beans, lima beans, and tomatoes grow well. Oak, hickory, and sweetgum are suitable trees.

Clean-tilled crops that leave a large amount of residue can be grown year after year if terracing and contour cultivation are practiced. Row crops can be grown in rotation with grasses and legumes if contour cultivation is practiced. Close-growing crops that leave a large amount of residue can be grown continuously without terracing or special row direction.

Sprinkler irrigation is suitable. The nearly level areas can be leveled and then irrigated by a row or border system.

Capability unit IIe–3

This unit consists of Grubbs silt loam, 1 to 3 percent slopes, a somewhat poorly drained soil on old alluvial terraces. The friable surface layer of this soil is 5 to 7 inches thick. The subsoil is reddish-brown, firm clay underlain by gray and brown, mottled silty clay loam. Below a depth of about 25 inches is a moderately large amount of sodium and magnesium.

Infiltration and permeability are very slow, and the available water capacity is moderate. The organic-matter content is low to medium. Fertility is moderate. The reaction is very strongly acid to a depth of about 25 inches, but alkaline below that depth.

This soil is suited to cotton, soybeans, small grain, and lespedeza. Some areas are parts of ricefields. Bermudagrass, dallisgrass, and tall fescue are suitable grasses, and white clover, sericea lespedeza, and annual lespedeza are suitable legumes.

Cultivated crops that leave a large amount of residue can be grown year after year if contour cultivation or cross-slope farming is practiced.

This soil is moderately difficult to till. The concentration of sodium in the lower part of the subsoil is a limitation if this soil is leveled.

Capability unit IIw–1

This unit consists of Bowdre silty clay loam, 0 to 1 percent slopes, a moderately well drained, dark-brown, mottled soil on bottom lands. The surface layer of this soil is 5 to 9 inches thick. The upper part of the subsoil is silty clay loam, and the lower part consists of layers of loam, fine sandy loam, silt loam, and silty clay loam.

Infiltration and permeability are slow, and the available water capacity is moderately high. The organic-matter content is low to medium. Natural fertility is high, and the reaction is slightly acid to neutral.

This soil is well suited to soybeans, corn, cotton, rice, small grain, and grain sorghum. Lespedeza, white clover, crimson clover, vetch, and Austrian Winter peas are suitable legumes, and bermudagrass, dallisgrass, and tall fescue are well-suited grasses. Trees that grow well are oak, pecan, hickory, ash, cottonwood, sweetgum, and hackberry.

Cultivated crops that leave large amounts of residue can be grown year after year if drainage is provided. Irrigation is feasible.

Capability unit IIw–2

This unit consists of somewhat poorly drained, level to gently undulating soils on bottom lands. These soils are members of the Commerce, Dundee, and Mhoon series. They have a 4- to 10-inch surface layer of friable fine sandy loam or silt loam and a subsoil of friable loam, silt loam, silty clay loam, fine sandy loam, or sandy clay loam.

Permeability, infiltration, and the available water capacity are moderate. The organic-matter content is medium. Fertility is moderate to high, and the reaction is very strongly acid to mildly alkaline.

These soils are well suited to cotton, soybeans, corn, grain sorghum, and small grain. Bermudagrass, tall fescue, and dallisgrass are suitable grasses, and white clover, lespedeza, vetch, and Austrian Winter peas are suitable legumes. Trees that grow well are oak, hickory, cottonwood, and sweetgum.

Clean-tilled crops that leave a large amount of residue can be grown year after year if drainage is provided. Tillage is easy. Row and border irrigation are feasible in areas that have been leveled.

Capability unit IIw–3

This unit consists of level to nearly level, somewhat poorly drained soils of the Calloway series. These soils have a fragipan. They have a 4- to 9-inch surface layer of friable silt loam and a subsoil of firm silt loam or silty clay loam.

Infiltration is moderate, permeability is slow, and the available water capacity is moderate. The organic-matter content is low. Fertility is moderate, and the reaction is strongly acid to very strongly acid.

These soils are well suited to rice, soybeans, cotton, and grain sorghum. Bermudagrass, dallisgrass, tall fescue, white clover, and lespedeza are suitable pasture plants. Trees that grow well are pecan, hickory, oak, and sweetgum.

Cultivated crops that leave a large amount of residue can be grown year after year if drainage is provided.

These soils are easy to till. Most areas can be leveled and smoothed so as to permit efficient management of irrigation water.

Capability unit IIw–4

This unit consists of somewhat poorly drained, level to nearly level soils of the Hillemann series. These soils have a 5- to 7-inch surface layer of friable silt loam and a subsoil of silty clay loam. At a depth of about 20 inches is a clayey layer 6 to 12 inches thick. Below a depth of 30 inches in some places are moderately large amounts of sodium and magnesium, which may be harmful to some crops.

Infiltration is moderate, permeability is slow, and the available water capacity is moderate. The organic-matter content is low to medium. Fertility is low to moderate, and the reaction is medium acid.

These soils are suited to rice, soybeans, small grain, grain sorghum, and cotton. Vetch, Austrian Winter peas, crimson clover, white clover, and lespedeza are suitable legumes, and bermudagrass, dallisgrass, and tall fescue are suitable grasses.

Clean-tilled crops that leave a large amount of residue can be grown year after year if drainage is provided.

These soils are easy to till. Most areas can be leveled so as to improve drainage and permit efficient management of irrigation water.

Capability unit IIIe–1

This unit consists of well-drained to somewhat excessively drained, undulating and gently sloping soils on natural levees. These soils are in the Beulah and Bosket series. They have a surface layer of friable sandy loam or fine sandy loam 6 to 18 inches thick. Their subsoil is friable to firm fine sandy loam or sandy clay loam.

Permeability and infiltration are moderate to moderately rapid except where there is a plowsole. The available water capacity is low to moderate. The content of organic matter is medium to low. Natural fertility is moderate to high, and the reaction is medium acid to strongly acid.

These soils are well suited to cotton, corn, soybeans, grain sorghum, and small grain. Watermelons and strawberries are suitable truck crops. Vetch, Austrian Winter peas, white clover, lespedeza, bermudagrass, dallisgrass, and tall fescue are suitable pasture plants. Trees that grow well on these soils are cottonwood, oak, hickory, and sweetgum.

These soils can be used continuously for clean-tilled crops that leave a large amount of residue if they are properly fertilized and tilled, if cover crops are grown annually, and if cross-slope farming is practiced. They can be used for close-growing crops continuously without cross-slope farming.

Cover crops or crop residue should be left on these soils as late in spring as possible to protect them from blowing. Growing alternate strips of small grain and row crops crosswise to the prevailing wind is effective in controlling erosion.

Capability unit IIIe–2

This unit consists of moderately well drained, nearly level to gently sloping, gray and yellowish-brown soils of the Grenada series. These soils have a 6-inch surface layer of friable silt loam and a subsoil of firm silty clay loam or silty clay. A fragipan begins at a depth of about 20 inches.

Infiltration is moderate, permeability is moderate, and the available water capacity is moderate. The organic-matter content is low. Natural fertility is moderate, and the reaction is medium acid to strongly acid.

These soils are suited to cotton, soybeans, and small grain. Vetch, Austrian Winter peas, white clover, sericea lespedeza, annual lespedeza, and crimson clover are well-suited legumes, and bermudagrass, dallisgrass, and tall fescue are suitable pasture grasses. Trees that grow well are pecan, peach, oak, hickory, and sweetgum.

Clean-tilled crops that leave a large amount of residue can be grown on most of the acreage, if the soils are terraced and farmed on the contour. The 10 percent of the acreage that has the strongest slopes should be kept in grass and legumes one-half to three-fourths of the time, depending on what other measures are taken to control erosion.

Capability unit IIIw–1

This unit consists of level to gently undulating, poorly drained soils of the Alligator, Forestdale, Mhoon, and Sharkey series. These soils have a surface layer of silt loam to clay and a subsoil of clay or of stratified clayey and silty materials.

Infiltration and permeability are slow to very slow, and the available water capacity is moderate to high. The organic-matter content is medium. Natural fertility is moderate to high, and the reaction is very strongly acid to neutral.

These soils are suited to rice, soybeans, small grain, grain sorghum, and cotton. Bermudagrass, dallisgrass, and tall fescue are well-suited grasses, and white clover, lespedeza, and Austrian Winter peas are well-suited legumes. Trees that grow well are oak, hickory, cottonwood, pecan, hackberry, and sweetgum.

Clean-tilled crops that leave a large amount of residue can be grown year after year if drainage is provided.

A suitable cropping system is 2 or 3 years of rice followed by 2 years of soybeans or lespedeza. Growing rice on these soils is risky unless there is an irrigation system that allows rapid application of water and a drainage system that provides for rapid removal of excess irrigation water and excess rainfall. If adequate provision has been made for drainage, the other crops can be irrigated through the rice irrigation system. The feasibility of irrigation depends upon the slopes. Most areas can be leveled.

Capability unit IIIw–2

This unit consists of level to gently undulating, somewhat poorly drained to poorly drained soils that are flooded occasionally for short periods in winter and late in spring. These soils are members of the Amagon, Grubbs, McCrory, Patterson, and Tuckerman series. They have a 5- to 15-inch surface layer of friable fine sandy loam, loamy fine sand, or silt loam and a subsoil of silt loam, fine sandy loam, silty clay loam, or sandy clay loam.

Permeability and infiltration are slow to very slow, and the available water capacity is moderate to moderately low. The reaction is very strongly acid to strongly acid.

These soils are well suited to soybeans, cotton, small grain, and grain sorghum. Bermudagrass, dallisgrass, and tall fescue are suitable grasses, and lespedeza, white clover, and Austrian Winter peas are suitable legumes. Trees that grow well are water-tolerant oaks, willow, cottonwood, and sweetgum.

Clean-tilled crops that leave a large amount of residue can be grown year after year if drainage is provided.

These soils are easy to till. Irrigation is feasible. Some areas can be leveled.

Capability unit IIIw–3

This unit consists of Bowdre silty clay loam, gently undulating, a moderately well drained, mottled soil on bottom lands. This soil tends to puddle and crust after heavy rains. It has a surface layer 4 to 9 inches thick and a subsoil of friable silt loam, loam, or silty clay loam.

Permeability and infiltration are slow, and the available water capacity is moderate to high. Natural fertility is high, and the reaction is slightly acid to neutral.

This soil is well suited to soybeans, cotton, and corn. Although small grain and grain sorghum are suitable, they are not commonly grown. Bermudagrass, dallisgrass, tall fescue, white clover, and lespedeza are suitable pasture plants. Trees that grow well are pecan, hickory, oak, cottonwood, and sweetgum.

Cultivated crops that leave a large amount of residue can be grown year after year if drainage is provided.

This soil is easy to till, but it can be cultivated only within a somewhat limited range of moisture content. It becomes cloddy if plowed when wet but remains in good tilth if cultivated only when moist. Irrigation is feasible if the land is leveled.

Capability unit IIIw–4

This unit consists of somewhat poorly drained to poorly drained, level soils of the Foley and Grubbs series. These soils have a surface layer of friable silt loam. The upper part of the subsoil, to a depth of 18 to 24 inches, is clay, silty clay loam, or light silty clay, and the lower part is firm silty clay loam, silty clay, or clay. The lower part contains moderately large amounts of sodium and magnesium, which are harmful to some crops.

Infiltration is slow, permeability is slow to very slow, and the available water capacity is moderate. The organic-matter content is low. Fertility is low to moderate, and the reaction is strongly acid in the upper part of the profile and alkaline in the lower part.

These soils are suited to rice, soybeans, and cotton. Bermudagrass, dallisgrass, and tall fescue are suitable grasses, and lespedeza, white clover, and Austrian Winter peas are suitable legumes. Trees that grow well are elm, honeylocust, hackberry, and water-tolerant oaks.

Clean-tilled crops that leave a large amount of residue can be grown year after year if drainage is provided. Cuts made in leveling should be shallow, so that the sodium and magnesium will not be too near the surface in leveled areas.

Capability unit IIIw–5

This unit consists of poorly drained, level soils of the Calhoun, Crowley, and Henry series. These soils have a surface layer of friable silt loam 4 to 10 inches thick and a subsoil of silt loam or silty clay loam that is friable to firm. In some places, a fragipan occurs at a depth of 28 to 40 inches.

The content of organic matter is low. Infiltration is moderate, and permeability is slow. The available water capacity is low to moderate, depending upon depth to the compact subsoil. The reaction is medium acid to very strongly acid, and natural fertility is moderate.

Rice, soybeans, and grain sorghum are suitable cultivated crops. Some cotton is grown, but the soils are not considered well suited to this crop. Bermudagrass, dallisgrass, tall fescue, white clover, and lespedeza are suitable pasture plants. Oak, sweetgum, and hickory are suitable trees.

If properly fertilized, tilled, and drained, these soils can be used continuously for clean-tilled crops that leave a large amount of residue.

A suitable cropping system is 1 or 2 years of rice followed by 2 years of soybeans or lespedeza. Rice culture is risky unless there is an irrigation system that allows rapid application of water and a drainage system that provides for rapid removal of irrigation water and excess rainfall. If adequate provision has been made for drainage, the other crops can be irrigated through the rice irrigation system.

Capability unit IIIs–1

This unit consists of gently undulating to undulating, excessively drained soils of the Bruno series. These soils have a surface layer of loamy fine sand or sandy loam and a subsoil of loamy fine sand.

Infiltration and permeability are moderately rapid to rapid, and the available water capacity is low. The organic-matter content is moderately low. Natural fertility is moderately low, and the reaction is medium acid to neutral.

These soils are well suited to small grain and watermelons and fairly well suited to cotton and soybeans. Weeping lovegrass is the most suitable pasture grass.

Cultivated crops that leave a large amount of residue can be grown year after year if the soils are properly fertilized and tilled and cover crops are grown each year.

Droughtiness is the main limitation. In spring there is a hazard of wind erosion. Cover crops or crop residue should be left on these soils as late in spring as possible to protect them from blowing. Growing alternate strips of small grain and row crops crosswise to the prevailing wind also is effective in controlling erosion.

Capability unit Vw–1

This unit consists of poorly drained, frequently flooded (fig. 5), level to gently undulating soils of the Mhoon, Sharkey, and Zachary series. These soils have a 6-inch surface layer of very dark grayish-brown to gray silt loam, silty clay loam, or clay and a subsoil of gray silty clay loam, silty clay, or clay.

Infiltration and permeability are slow to very slow, and the available water capacity is moderate to high. The organic-matter content is medium to high. Natural fertility is moderate to high, and the reaction is very strongly acid to neutral.

These soils are poorly suited to cultivated crops. They can be used for pasture but, unless protected from floods, are better suited to woodland. Bermudagrass, johnsongrass, dallisgrass, tall fescue, and white clover are suitable pasture plants. Trees that grow well are water-tolerant oaks, gum, cypress, hackberry, hickory, and cottonwood. Nearly all areas are woodland.

Capability unit VIs–1

This unit consists of Lafe-Foley silt loams, which are poorly drained to somewhat poorly drained, level soils. These soils have a friable surface layer of silt loam and a very firm subsoil of silty clay loam.

Figure 5.—**Flooding on Zachary silt loam, which is in capability unit Vw–1, but if protected from flooding, is in capability unit IIIw–2.**

Infiltration and permeability are slow or very slow, and the available water capacity is moderate to very low. The organic-matter content is low. Reaction is strongly acid in the surface layer and strongly akaline in the subsoil. Natural fertility is low.

These soils are not suitable for clean-tilled crops and are very poorly suited to forage crops or wood crops. Bermudagrass is the most suitable pasture grass. Legumes usually do not survive the summer. There are scattered stands of scrub post oak, blackjack oak, elm, and honeylocust, but no commercially valuable trees.

Sodium and magnesium, in concentrations strong enough to be harmful to most plants, occur throughout the profile. These have the effect of making the root zone shallow, and they prevent the development of a strong structure in the surface layer.

Predicted Yields

The predicted yields of the principal crops shown in table 2 are based mainly on data supplied by farmers and other agricultural workers in Woodruff County. Improved management at which such yields are obtained includes (a) using proper equipment at the right time to prepare the soils, plant the crops, control weeds, and harvest the crops; (b) following a systematic program for controlling insects and plant diseases; (c) applying fertilizer according to the results of soil tests; (d) choosing the crop varieties that are well suited to the soils and to the type of farming operation; (e) irrigating crops; and (f) draining wet soils.

Use of the Soils for Woodland [1]

Hardwood forests once covered this county. The principal commercial trees were southern red oak, cherrybark oak, pin oak, water oak, willow oak, Nuttall oak, Shumard oak, white oak, cow oak, overcup oak, sweetgum, tupelogum, cypress, pecan, hackberry, and ash.

Now, as a result of overcutting, burning, and, in recent years, land clearing, forests cover less than 30 percent of the county. The trend is toward the clearing of more land. Improved drainage and flood control have made clearing practical.

Management of woodland can be planned more effectively if soils are grouped according to those characteristics that affect the growth of trees and the management of stands. The soils in Woodruff County have been placed in 12 woodland groups, each consisting of soils that are about the same in suitability for wood crops, require about the same management, and have about the same potential productivity.

Listed in table 3 are the woodland groups, a brief description of the soils in each group, the hazards and limitations that affect management, the potential productivity of the soils of each group for selected kinds of trees, and the kinds of trees to be preferred in management of existing stands and for planting. The figures given for potential productivity are adapted from soil-site studies performed by the U.S. Soil Conservation Service and the U.S. Forest Service (*13*, *14*, *17*, *19*).[2]

The erosion hazard is rated according to the risk of erosion in well-managed woodland that is not protected by special practices. The hazard is slight if a small loss of soil is expected. Generally, only slight erosion occurs if slopes are 2 percent or less and runoff is slow. The hazard is moderate if there would be a moderate loss of soil unless runoff is controlled and vegetative cover is maintained. It is severe on steep slopes where runoff is rapid and infiltration and permeability are slow.

The equipment limitation is slight if there are no restrictions on the type of equipment or the time of year that the equipment can be used, except for short periods after a heavy rainfall. It is moderate if slopes are moderately steep, if the use of heavy equipment is restricted by wetness in winter and early in spring, or if the use of equipment would damage tree roots to some extent. For the county, a moderate limitation means that equipment can be used only from March through November in most years, or that the use is limited by moderately steep slopes or by a severe erosion hazard. The limitation is severe if many types of equipment cannot be used, if equipment cannot be used more than 3 months a year, or if use of the equipment would severely damage the roots of trees and the structure and stability of the soil. Moderately steep, stony soils and low, wet soils have severe limitations. For this county, a severe limitation means that the use of equipment is limited in most years to the driest months—July through October.

Seedling mortality refers to the loss of either planted or naturally occurring seedlings. Even under the most favorable conditions, some seedlings die. Some of the conditions that adversely affect seedlings are unfavorable texture, poor drainage, and flooding. Seedling mortality is slight if not more than 25 percent of the planted seedlings die, or if trees regenerate naturally. It is moderate if 25 to 50 percent of the seedlings die, or if trees do not regenerate adequately. Mortality is severe if more than 50 percent of the planted seedlings die or if trees do not regenerate.

[1] J. T. BEENE, forester, Soil Conservation Service, helped prepare this section.

[2] Italic numbers in parentheses refer to Literature Cited, page 58.

TABLE 2.—*Predicted acre yields of principal crops*

[These yields can be obtained under improved management. Absence of figure indicates that the crop is not suited or not commonly grown]

Soil	Cotton	Soybeans	Rice	Wheat	Corn	Pasture	
						Common bermudagrass	Fescue
	Lb. of lint	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*A.U.M.*[1]	*A.U.M.*[1]
Alligator silt loam, 0 to 1 percent slopes	550	27	90	------	38	7	8
Alligator silt loam, 1 to 3 percent slopes	525	25	80	------	35	7	8
Alligator silty clay loam, 0 to 1 percent slopes	550	27	90	------	38	7	8
Amagon silt loam	620	32	85	------	------	7.5	9
Amagon-Grubbs silt loams:							
Amagon	675	32	85	------	------	7.5	9
Grubbs	675	28	95	------	------	8	8
Beulah and Bruno sandy loams, gently undulating:							
Beulah	660	32	------	40	60	8	8
Bruno	440	22	------	22	------	3.5	---------
Beulah and Bruno sandy loams, undulating:							
Beulah	600	30	------	40	55	8	8
Bruno	400	22	------	22	------	3.5	---------
Bosket fine sandy loam, 0 to 1 percent slopes	800	40	------	45	85	9	9
Bosket fine sandy loam, 3 to 8 percent slopes	700	30	------	45	70	9	9
Bosket fine sandy loam, gently undulating	775	38	------	45	80	9	9
Bowdre silty clay loam, 0 to 1 percent slopes	675	36	85	40	60	9	9
Bowdre silty clay loam, gently undulating	650	35	85	40	60	9	9
Bruno loamy fine sand, gently undulating	440	22	------	22	------	3.5	---------
Bruno loamy fine sand, undulating	400	22	------	22	------	3.5	---------
Calhoun silt loam	425	25	85	------	------	6	7
Calloway silt loam, 0 to 1 percent slopes	600	30	100	35	------	7	8
Calloway silt loam, 1 to 3 percent slopes	590	28	90	34	------	7	8
Commerce fine sandy loam, gently undulating	840	38	------	45	85	9	9
Commerce silt loam, gently undulating	840	38	------	45	80	9	9
Crowley and Hillemann silt loams, 0 to 1 percent slopes	550	30	100	40	55	7	7
Crowley and Hillemann silt loams, 1 to 3 percent slopes	500	30	95	40	50	7	7
Dubbs fine sandy loam, 0 to 1 percent slopes	800	40	------	45	85	9	9
Dubbs fine sandy loam, gently undulating	775	38	------	45	80	9	9
Dubbs silt loam, 0 to 1 percent slopes	800	40	------	45	85	9	9
Dubbs silt loam, 1 to 3 percent slopes	775	38	------	45	80	9	9
Dundee fine sandy loam, 0 to 1 percent slopes	790	38	90	45	75	9	9
Dundee fine sandy loam, 1 to 3 percent slopes	725	33	------	45	75	9	9
Dundee fine sandy loam, gently undulating	715	33	------	42	70	9	9
Dundee silt loam, 0 to 1 percent slopes	790	38	90	45	75	9	9
Dundee silt loam, gently undulating	715	33	------	42	70	9	9
Forestdale silty clay loam	640	30	95	------	------	7	9
Grenada silt loam, 1 to 3 percent slopes	650	31	90	40	70	7	8
Grenada silt loam, 3 to 8 percent slopes	575	26	------	32	65	6	6.5
Grenada silt loam, 3 to 8 percent slopes, eroded	550	25	------	28	55	6	6
Grubbs silt loam, 0 to 1 percent slopes	675	28	95	40	------	8	8
Grubbs silt loam, 1 to 3 percent slopes	675	28	95	------	------	6	8
Grubbs-Foley complex	675	28	95	40	------	6	8
Henry silt loam	440	28	95	35	------	6	7
Lafe-Foley silt loams:							
Lafe	--------	10	20	------	------	3	---------
Foley	675	28	95	40	------	6	8
McCrory complex	675	28	85	40	------	6	8
Mhoon fine sandy loam	700	35	90	40	------	9	9
Mhoon sandy clay loam	600	35	95	40	------	9	9
Patterson loamy fine sand, 0 to 1 percent slopes	550	25	25	------	40	7	7
Patterson loamy fine sand, gently undulating	525	25	24	------	40	7	7
Robinsonville fine sandy loam	800	38	38	40	60	9	9
Sharkey clay, 0 to 1 percent slopes	580	32	95	------	40	7	8
Sharkey clay, gently undulating	550	30	90	------	40	7	8
Sharkey silty clay loam, 0 to 1 percent slopes	600	34	95	------	40	7	8
Sharkey silty clay loam, gently undulating	575	30	85	------	40	7	8
Sharkey and Mhoon soils	--------	--------	------	------	------	----------	---------
Tuckerman fine sandy loam	675	32	------	------	------	7.5	9
Zachary silt loam	--------	25	90	------	------	6	8
Zachary silty clay loam	--------	25	90	------	------	6	8

[1] A.U.M. is animal-unit-months. The figures represent the number of months that 1 acre will provide grazing for 1 animal (1,000 pounds live weight), or the number of months the pasture can be grazed multiplied by the number of animal units an acre will support. For example, 1 acre of Alligator silt loam in an improved pasture of fescue will provide grazing for 4 animals for 2 months, so it has a rating of 8 animal-unit-months.

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TABLE 3.—*Woodland groups and*

Woodland group, map symbols, and description of soils	Management problems		
	Erosion hazard	Equipment limitation	Seedling mortality
Group 1 BkA, BkU, CmU, CoU, DbA, DbU, DsA, DsB, Ro. Level to gently undulating, moderately well drained to well drained, loamy soils on bottom lands. Runoff is slow, permeability is moderate, and the available water capacity is moderate to high.	Slight	Slight	Slight
Group 2 BoA, BoU. Level to gently undulating, moderately well drained, stratified, loamy soils on bottom lands. Runoff is slow, permeability is slow, and the available water capacity is moderate to high.	Slight	Moderate	Moderate
Group 3 BkC, DuA, DuB, DuU, DvA, DvU. Level to gently undulating, somewhat poorly drained to well drained, loamy soils on bottom lands. Runoff is slow to medium, permeability is moderate, and the available water capacity is moderate.	Slight	Slight	Slight
Group 4 AaA, AaB, AcA, Mh, Mn, SkA, SkU, Sm. Level to gently undulating, poorly drained, loamy soils on bottom lands. The subsoil is clayey. Runoff is slow to ponded, permeability is very slow, and the available water capacity is moderate to high.	Slight	Moderate	Moderate
Group 5 ShA, ShU, Za, Zc. Level to gently undulating, poorly drained, loamy and clayey soils on bottom lands. Runoff is slow to ponded, permeability is slow to very slow, and the available water capacity is moderate to high.	Slight	Severe	Severe
Group 6 BbU, BbC, BrU, BrC. Gently undulating to undulating, somewhat excessively drained to excessively drained, loamy and sandy soils on bottom lands. Runoff is slow, permeability is rapid, and the available water capacity is moderately low to low.	Slight	Moderate	Moderate
Group 7 ClA, ClB. Level to nearly level, somewhat poorly drained, loamy soils on uplands. Runoff is slow to medium, permeability is slow, and the available water capacity is moderate.	Slight	Slight	Slight
Group 8 Am, Ar (Amagon part), Fo, PaA, PaU, Tu. Level to gently undulating, somewhat poorly drained to poorly drained, loamy and sandy soils on bottom lands. Runoff is slow to ponded, permeability is moderate to very slow, and the available water capacity is moderate.	Moderate	Moderate	Moderate
Group 9 GaB, GaC, GaC2. Nearly level to gently sloping, moderately well drained, loamy soils on uplands. Runoff is slow to ponded, permeability is slow, and the available water capacity is moderate.	Moderate	Moderate	Slight
Group 10 Ca, He. Level, poorly drained, loamy soils on uplands. Runoff is slow to ponded, permeability is slow to very slow, and the available water capacity is moderate.	Slight	Moderate	Moderate
Group 11 Ar (Grubbs part), CrA, CrB, GbA, GbB, Gf, Mc. Level to nearly level, poorly drained to somewhat poorly drained, loamy soils on bottom lands and uplands. Runoff is slow to medium, permeability is slow to very slow, and the available water capacity is moderate. The lower part of the subsoil contains a large amount of salts.	Slight	Moderate	Moderate
Group 12 Lf. Level, somewhat poorly drained to poorly drained, loamy soils on uplands. Large amounts of salts throughout the subsoil. Runoff is slow, permeability is moderate to very slow, and the available water capacity is moderate to very low.	(2)	(2)	(2)

[1] Site indexes are adapted from soil-site studies performed by the U.S. Soil Conservation Service and the U.S. Forest Service (*13, 14, 17, 19*).

[2] Yields shown for pine are for well-stocked, unmanaged, even-aged stands at age 60 (*11*); yields shown for cottonwoods are for well-stocked, even-aged, managed stands at age 30; those shown for other hardwoods are for well-stocked, even-aged, managed stands at age 60.

factors in woodland management

Potential productivity			Preferred species—	
Selected species	Estimated site index[1]	Average yearly growth[2]	In existing stands	For planting
	Ft.	*Bd. ft./acre (Doyle rule)*		
Cottonwood	105+	585+	Cottonwood, cherrybark oak, Nuttall oak, Shumard oak, cow oak, water oak, willow oak, sweetgum, persimmon, sycamore.	Cottonwood, cherrybark oak, Nuttall oak, cow oak, sweetgum, sycamore.
Cherrybark oak	100+	410+		
Water oak	100+	410+		
Willow oak	100+	410+		
Sweetgum	100+	430+		
Cottonwood	105+	585+	Cottonwood, cherrybark oak, Nuttall oak, Shumard oak, cow oak, water oak, willow oak, sweetgum, persimmon, sycamore.	Cottonwood, cherrybark oak, Nuttall oak, cow oak, sweetgum, sycamore.
Cherrybark oak	100+	410+		
Water oak	100+	410+		
Willow oak	100+	410+		
Sweetgum	100+	430+		
Cottonwood	95 to 104	415 to 565	Cherrybark oak, cottonwood, Shumard oak, water oak, willow oak, sweetgum, sycamore.	Cherrybark oak, cottonwood, sweetgum, sycamore.
Cherrybark oak	90 to 99	290 to 395		
Water oak	90 to 99	290 to 395		
Willow oak	90 to 99	290 to 395		
Sweetgum	90 to 99	310 to 420		
Cottonwood	95 to 104	415 to 565	Green ash, cypress, cottonwood, cherrybark oak, Nuttall oak, overcup oak, water oak, willow oak, persimmon, sweetgum, sycamore.	Green ash, cypress, cottonwood, Nuttall oak, sycamore.
Cherrybark oak	90 to 99	290 to 395		
Water oak	90 to 99	290 to 395		
Willow oak	90 to 99	290 to 395		
Sweetgum	90 to 99	310 to 420		
Cottonwood	95 to 104	415 to 565	Green ash, cypress, cottonwood, cherrybark oak, Nuttall oak, overcup oak, water oak, willow oak, persimmon, sweetgum, sycamore.	Green ash, cypress, cottonwood, Nuttall oak, sycamore.
Cherrybark oak	90 to 99	290 to 395		
Water oak	90 to 99	290 to 395		
Sweetgum	90 to 99	310 to 420		
Cottonwood	95 to 104	415 to 565	Green ash, cottonwood, hackberry, silver maple, sycamore, sweetgum, cherrybark oak, water oak, willow oak.	Cottonwood, sweetgum, sycamore.
Cherrybark oak	90 to 99	290 to 395		
Water oak	90 to 99	290 to 395		
Willow oak	90 to 99	290 to 395		
Sweetgum	90 to 99	310 to 420		
Loblolly pine	70 to 79	165 to 265	Loblolly pine, shortleaf pine, cherrybark oak, sweetgum, yellow-poplar, black walnut, Shumard oak, water oak, willow oak, black oak, southern red oak, white oak, basswood, sycamore, black cherry, white ash, cottonwood.	Loblolly pine, shortleaf pine, cherrybark oak, sweetgum, Shumard oak, yellow-poplar, black walnut, white ash, black oak, sycamore.
Shortleaf pine	65 to 74	160 to 260		
Cherrybark oak	90 to 99	290 to 395		
Sweetgum	85 to 94	260 to 360		
Black oak	75 to 84	155 to 230		
Cherrybark oak	85 to 94	240 to 335	Cherrybark oak, Nuttall oak, sweetgum, water oak, willow oak, hackberry, green ash, sycamore.	Sweetgum, Nuttall oak, sycamore, green ash.
Sweetgum	80 to 89	215 to 300		
Loblolly pine	70 to 79	165 to 265	Loblolly pine, shortleaf pine, cherrybark oak, sweetgum, Shumard oak, water oak, black oak, southern red oak.	Loblolly pine, shortleaf pine, cherrybark oak, Shumard oak, sweetgum, black walnut.
Shortleaf pine	65 to 74	160 to 260		
Cherrybark oak	80 to 89	195 to 280		
Sweetgum	80 to 89	215 to 300		
Black oak	70 to 79	120 to 185		
Loblolly pine	65 to 74	160 to 260	Loblolly pine, cherrybark oak, Shumard oak, water oak, sweetgum.	Loblolly pine, cherrybark oak, Shumard oak, sweetgum.
Cherrybark oak	75 to 84	155 to 230		
Sweetgum	70 to 79	140 to 205		
Water oak	70 to 79	120 to 185		
Loblolly pine	55 to 64	85 to 165	Loblolly pine, sweetgum, sycamore	Loblolly pine, sweetgum, sycamore.
Sweetgum	80 to 89	215 to 300		
[3]	[3]	[3]	[3]	[3].

The yields shown for hardwoods are adapted from published research on southern hardwoods (*15*) and upland central hardwoods (*18*) as well as from soil-site studies performed by the Soil Conservation Service.

[3] Not suitable for trees.

The potential productivity of a soil for a specified kind of tree is expressed as site index. The site index for a given soil is the height, in feet, that a specified kind of tree will reach in a given number of years. Table 3 shows, under the heading "Estimated site index," site indexes or ranges in site index for selected species, according to woodland group. The site indexes are based on the height of cottonwood at 30 years of age and the height of other hardwoods and pine at the age of 60 years.

The preferred species shown in table 3 were selected on the basis of their growth rate, their commercial value, the quality of their wood products, and their resistance to hazards.

Wildlife [3]

The soils in Woodruff County provide food and cover for many kinds of wildlife, and there are many sites suitable for ponds that can be stocked with fish. Table 4 lists the plants that provide food and cover for birds and animals and rates each kind of plant as choice, fair, or unimportant as a food.

Among the wildlife are deer, squirrel, rabbits, nongame birds, bobwhites, doves, wood ducks, and, in winter, large flocks of migrant ducks and some geese. The game fish most suitable for stocking ponds and reservoirs are largemouth bass, bluegill, redear sunfish, crappie, and catfish; the fish most suitable for commercial fish farming are buffalofish and catfish and minnows that can be used for bait.

The soils in Woodruff County have been placed in seven wildlife groups. The "Guide to Mapping Units" near the back of this survey shows which group each soil is in. The plants that provide food and cover for wildlife in Woodruff County are rated in table 5 according to their suitability for growth on the soils of each wildlife group. Many plants other than those listed, including weeds, also provide food. The wildlife groups are discussed in the following paragraphs.

Wildlife group 1

This group consists of somewhat poorly drained to excessively drained, level to undulating soils on wide bottom

[3] ROY A. GRIZZELL, JR., biologist, Soil Conservation Service, helped prepare this section.

TABLE 4.—*Suitability of plants as food for wildlife*

[The figure 1 indicates that the plant is *choice* (attractive and nutritious) for the given kind of wildlife; the figure 2, *fair* (eaten when choice foods are not available); the figure 3, *unimportant* (eaten only in small amounts)]

Plant	Bobwhite	Deer	Dove	Duck	Rabbit	Squirrel	Nongame birds [1]		
							Fruit eaters	Grain and seed eaters	Nut and acorn eaters
Bahiagrass	3	2	2	3	3	3	3	2	3
Barnyardgrass	3	3	1	1	3	3	3	2	3
Blackberry and dewberry	1	2	3	3	3	1	1	3	1
Blackgum	2	2	3	3	3	2	1	3	3
Browntop millet	1	2	1	1	1	3	3	1	3
Cherry, black	1	2	3	3	3	1	1	3	3
Clover, crimson and white	1	1	3	3	1	3	3	3	3
Corn	1	1	1	1	1	1	3	1	1
Cowpeas	1	3	2	3	3	3	3	2	3
Croton	1	3	1	3	3	3	3	2	3
Dogwood, flowering	1	1	3	3	3	2	1	3	2
Elm	3	2	3	3	3	1	3	2	3
Fescue, tall	3	2	3	3	2	3	3	3	3
Grapes, wild	3	1	3	3	3	2	1	3	3
Greenbrier	3	1	3	3	1	3	2	3	3
Hackberry	2	1	3	3	3	2	1	3	3
Hickory	3	2	3	3	3	1	3	3	3
Honeysuckle	3	1	3	3	3	3	1	3	3
Japanese millet	1	3	1	1	1	3	3	1	3
Johnsongrass	2	2	2	3	3	3	3	1	3
Lespedeza, annual	1	1	2	3	2	3	3	2	3
Lespedeza, bicolor	1	1	3	3	2	2	3	3	3
Lespedeza, sericea	3	3	3	3	3	3	3	3	3
Milkpea	1	2	3	3	1	3	3	3	3
Oak (acorns)	1	1	3	1	3	1	3	3	1
Partridgepea	1	3	3	3	3	3	3	3	3
Pecans	1	2	3	3	3	1	3	3	1
Ragweed, common	1	2	1	3	3	3	3	1	3
Rice	2	3	2	1	3	1	3	1	3
Small grain	1	1	2	2	1	1	3	1	3
Smartweed	3	3	3	1	3	3	3	2	3
Sorghum	1	1	1	1	1	1	3	1	3
Soybeans	2	1	2	1	2	3	3	3	3
Sweetgum	1	2	1	3	3	2	3	3	1
Tickclover	1	1	3	3	3	3	3	3	3
Walnut	3	3	3	3	3	1	3	3	1

[1] Among the fruit eaters are bluebirds, catbirds, mockingbirds, and robins; grain and seed eaters include blackbirds, cardinals, and sparrows; nut and acorn eaters include bluejays, chickadees, grackles, and woodpeckers.

TABLE 5.—*Suitability of plants to soils, by wildlife groups*

[The figure 1 indicates that the plant is suited to the soils in the given group; the figure 2, that it is marginally suited; the figure 3, that it is poorly suited or not suited]

Plant	Wildlife groups						
	1	2	3	4	5	6	7
Bahiagrass	1	1	1	1	1	1	3
Barnyardgrass	2	1	1	2	3	1	3
Blackberry and dewberry	1	1	1	1	1	1	3
Blackgum	1	2	1	1	2	2	3
Browntop millet	1	1	1	1	1	1	3
Cherry, black	1	3	2	2	1	3	3
Clover, crimson and white	1	1	1	2	1	1	3
Corn	1	3	3	1	2	3	3
Cowpeas	1	1	1	1	1	1	3
Croton	1	1	1	2	1	1	3
Dogwood, flowering	1	1	2	3	1	3	3
Elm	2	1	1	2	3	3	3
Fescue, tall	1	2	1	1	1	1	3
Grapes, wild	1	3	1	2	1	2	3
Greenbrier	1	1	1	1	1	1	3
Hackberry	1	2	1	1	3	3	3
Hickory	1	2	1	1	1	1	3
Honeysuckle	1	2	2	2	1	2	3
Japanese millet	1	1	1	1	1	1	3
Johnsongrass	1	2	2	2	1	1	3
Lespedeza, annual	1	1	1	1	1	1	3
Lespedeza, bicolor	1	2	3	3	1	3	3
Lespedeza, sericea	1	2	3	3	1	3	3
Milkpea	1	2	2	3	2	3	3
Oak (acorns)	1	2	1	1	2	2	3
Partridgepea	1	3	3	3	2	2	3
Pecans	1	3	1	1	2	2	3
Ragweed, common	1	1	2	2	1	2	3
Rice	3	1	3	1	1	1	3
Small grain	1	2	2	2	2	2	3
Smartweed	2	1	1	1	2	1	3
Sorghum	1	2	2	2	1	1	3
Soybeans	1	1	1	1	1	1	3
Sweetgum	1	3	1	1	2	2	3
Tickclover	1	2	3	3	1	2	3
Walnut	1	3	3	3	3	3	3

lands. A small acreage is flooded occasionally. Most of the acreage is cultivated. This group makes up about 22 percent of the county.

These soils are well suited to plants that provide food for bobwhites, doves, rabbits, and squirrels. Because they are moderately to rapidly permeable, they are poorly suited to farm ponds and to impoundments for waterfowl.

Wildlife group 2

This group consists of poorly drained to somewhat poorly drained, level to nearly level, loamy soils on wide bottom lands and on terraces. Most of the acreage is cultivated. This group makes up about 12 percent of the county.

Because of concentrations of sodium in the subsoil, these soils are only fair for plants that provide food for wildlife. They are suitable for impoundments only if they have not been excessively disturbed.

Wildlife group 3

This group consists of poorly drained, level and gently undulating, loamy and sandy soils on wide flats and in depressions on natural levees and along streams. Most of the acreage is cultivated. This group makes up about 18.9 percent of the county.

These soils are only fairly well suited to plants that are food for wildlife. Some areas are suited only to water-tolerant plants. They are fairly to poorly suited to impoundments, because they generally are underlain by sandy material.

Wildlife group 4

This group consists of poorly drained to moderately well drained, level to gently undulating, loamy and clayey soils on wide flats in slack-water areas. Most of the acreage is cultivated. This group makes up about 27 percent of the county.

If these soils are protected by levees and drainage systems, they are well suited to rice, soybeans, and browntop millet. They are suitable for impoundments that can be used for fish farming and attracting ducks.

Wildlife group 5

This group consists of moderately well drained and somewhat poorly drained, loamy soils that have a compact subsoil. Although the slope is as much as 8 percent in some places, it is no more than 2 percent in most places. Most of the acreage is cultivated. This group makes up about 6 percent of the county.

These soils are well suited to rice, soybeans, and browntop millet. They are also suitable for impoundments that can be used for fish farming and attracting ducks.

Wildlife group 6

This group consists of level to nearly level, poorly drained, loamy soils on the loessal plains. Water is ponded in most areas for short periods each year. Most of the acreage is cultivated. This group makes up about 14 percent of the county.

These soils are well suited to rice, soybeans, and browntop millet. They are suited to impoundments that can be used for fish farming and attracting ducks.

Wildlife group 7

This group consists of Lafe-Foley silt loams, which are poorly drained and salty. These soils are poorly suited to plants that are food for wildlife, and they have only sparse stands of cover for wildlife. This group makes up 0.1 percent of the county.

Engineering Properties of the Soils [4]

Some soil properties are of special interest to engineers because they affect the construction and maintenance of roads, airports, pipelines, building foundations, facilities for water storage, erosion control structures, drainage systems, and sewage disposal systems. The properties most important to the engineer are permeability to water, shear strength, consolidation characteristics, texture, plasticity, and pH. Topography and the depth to unconsolidated material are also important.

[4] This section was prepared with the assistance of JAMES L. JANSKI, agricultural engineer, Soil Conservation Service. It includes information from the Arkansas State Highway Department, the U.S. Army Corps of Engineers, and the U.S. Bureau of Public Roads.

TABLE 6.—*Engineering*

[Tests performed by the Arkansas State Highway Department in cooperation with the U.S. Department of Commerce, Bureau of

Soil name and location	Parent material	SCS report number S–63–Ark–74–	Depth from surface	Horizon
			In.	
Alligator silt loam:				
NW¼NW¼ sec. 25, T. 8 N., R. 2 W. (modal).	Water-deposited sediments (old flood plains).	3–1	0 to 7	Ap
		3–3	12 to 31	C1g
		3–5	44 to 58	C2g
Amagon silt loam:				
SW¼NE¼NE¼ sec. 14, T. 8 N., R. 3 W. (modal).	Mississippi alluvium (old flood plains).	6–1	0 to 7	Alp
		6–4	14 to 28	B1
		6–5	28 to 40	B21
Bosket fine sandy loam:				
NE¼SE¼NW¼ sec. 34, T. 8 N., R. 2 W. (modal).	Alluvium (old flood plains).	2–1	0 to 8	Ap
		2–3	14 to 34	B2
		2–4	34 to 72	C1
Foley silt loam:				
NW¼NW¼NW¼ sec. 27, T. 8 N., R. 2 W. (modal).	Thin loess over water-deposited sediments.	4–1	0 to 5	A1
		4–5	22 to 42	B22tg
		4–6	42 to 72	C
NE¼NE¼NE¼ sec. 33, T. 8 N., R. 2 W. (clayey B horizon).	Thin loess over water-deposited sediments.	1–1	0 to 7	Ap
		1–3	15 to 29	B21tg
		1–5	36 to 74	C
Hillemann silt loam:				
NE¼NW¼NW¼ sec. 28, T. 5 N., R. 1 W. (modal).	Thin loess over water-deposited sediments (old flood plains).	5–1	0 to 6	Ap
		5–4	21 to 29	B2t
		5–6	36 to 72	C

[1] Based on AASHO Designation: T 99–57, Method A (*1*).

[2] Mechanical analysis according to AASHO Designation: T 88–57 (*1*). Results by this procedure may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are

The information in this report can be used to:

1. Make soil and land use studies that will aid in selecting and developing industrial, municipal, business, residential, and recreation sites.
2. Make preliminary estimates of properties for use in the planning of agricultural drainage systems, terraces, diversion terraces, waterways, farm ponds, earthen dams, and irrigation systems.
3. Make preliminary evaluations of soil conditions that will aid in selecting locations for highways and airports and in planning detailed investigations of selected locations.
4. Locate probable sources of gravel and sand suitable for use as structural material.
5. Correlate performance of engineering structures with types of soil and thus develop information that will be useful in designing and maintaining the structures.
6. Determine the suitability of soils for cross-country movement of vehicles and construction equipment.
7. Supplement information obtained from other published maps, reports, and aerial photographs.
8. Develop preliminary estimates for construction purposes pertinent to the particular area.
9. Develop working schedules for construction.
10. Appraise areas that have potential engineering uses.

With the use of the soil map for identification, the engineering interpretations reported here can be useful for many purposes. It should be emphasized that they will not eliminate the need for sampling and testing at the site of specific engineering works involving heavy loads and excavations deeper than the depth of layers here reported. Even in these situations, the soil map is useful for planning more detailed field investigations and for suggesting the kinds of problems that may be expected.

Some terms used by soil scientists may be unfamiliar to engineers, and other terms may have a special meaning in soil science. These terms are defined in the Glossary at the end of this survey.

Engineering classification systems

Two systems for classifying soils are in general use among engineers.

Most highway engineers classify soils according to the system approved by the American Association of State Highway Officials (AASHO) (*1*). This system of classification is based on grain-size gradation, liquid limit, plasticity index, and field performance in highways. Soil materials are classified in seven principal groups. The groups range from A–1, which consists of gravelly soils

test data

Public Roads, in accordance with standard procedures of the American Association of State Highway Officials (AASHO) (*1*)]

Moisture-density data [1]		Percentage passing sieve [2]—				Liquid limit	Plasticity index	Classification	
Maximum dry density	Optimum moisture	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)			AASHO	Unified [3]
Lb. per cu. ft.	*Pct.*					*Pct.*			
99	21	100	98	96	89	39	13	A-6(9)	ML-CL.
98	23	--------	100	99	98	56	28	A-7-6(18)	MH-CH.
98	23	--------	--------	100	95	50	23	A-7-6(15)	MH-CH.
105	18	100	99	98	82	(4)	(4)	A-4(8)	ML.
115	14	[5] 98	98	96	70	25	4	A-4(8)	ML-CL.
107	18	100	99	96	78	42	20	A-7-6(12)	CL.
119	12	--------	--------	100	44	(4)	(4)	A-4(2)	SM.
111	16	--------	--------	--------	40	30	8	A-4(1)	SM-SC.
114	14	--------	--------	--------	41	(4)	(4)	A-4(1)	SM.
88	27	--------	100	99	88	42	12	A-7-5(9)	ML.
96	22	--------	--------	--------	99	58	34	A-7-6(20)	CH.
95	26	[5] 99	99	98	94	55	29	A-7-6(17)	CH.
106	17	[5] 99	98	96	88	(4)	(4)	A-4(8)	ML.
106	19	100	99	98	92	49	27	A-7-6(17)	CL.
102	20	100	99	99	92	36	13	A-6(9)	ML-CL.
100	19	100	99	97	93	(4)	(4)	A-4(8)	ML.
101	21	--------	100	98	96	38	18	A-6(11)	CL.
105	19	100	99	98	94	49	24	A-7-6(16)	CL.

not suitable for naming textural classes for soils.

[3] SCS and BPR have agreed that all soils having plasticity indexes within 2 points of the A-line are to be given borderline classifications. Examples of borderline classifications obtained by this use are SM-SC and ML-CL.

[4] Nonplastic.

[5] 100 percent passed the ⅜-inch sieve.

of high bearing capacity (the best soils for subgrade) to A–7, which consists of clay soils having low strength when wet (the poorest soils for subgrade). Within each group, the relative engineering value of the soil material is indicated by a group index number. Group indexes range from 0 for the best material to 20 for the poorest. The group index is in parentheses after the soil symbol, for example A–6(9).

Some engineers prefer to use the Unified soil classification system established by the Corps of Engineers, U.S. Army (*21*). In this system, the soils are identified according to texture and plasticity and are grouped according to their performance as engineering construction materials. Soil materials are identified as coarse grained (eight classes), fine grained (six classes), and highly organic.

Engineering test data

To help evaluate the soils for engineering purposes, samples from six profiles representing five of the principal soil series in Woodruff County were tested in accordance with standard procedures. Only selected layers of each soil were tested. The results of these tests are given in table 6.

The engineering soil classifications in table 6 are based on data obtained by grain-size analysis and by tests to determine liquid limit and plastic limit. In the grain-size analysis, a combination of the sieve and hydrometer methods was used. The percentage of clay obtained by the hydrometer method should not be used in naming soil textural classes.

Table 6 also gives moisture-density data for the tested soils. If a soil material is compacted at successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the optimum moisture content is reached. After that, the density decreases as the moisture content increases. The highest dry density obtained in the compaction test is termed maximum dry density, and the corresponding moisture content is the optimum moisture. Moisture-density data are important in earthwork, because, as a rule, soil is most stable if it is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

The tests for liquid limit and plastic limit measure the effect of water on the consistence of the soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from semisolid to plastic. As the moisture content is further increased, the material changes from plastic to liquid. The plastic limit is the moisture content, expressed as a percentage of the oven-dry weight of the soil, at which the soil material passes from semisolid to plastic. The liquid limit is the moisture content at which the material passes from plastic to liquid. The plasticity index is the numerical difference between the

liquid limit and the plastic limit. It indicates the range of moisture content within which the soil material is plastic. Some silty and sandy soils are nonplastic; that is, they do not become plastic at any moisture content (*8*).

Estimated engineering properties

Table 7 shows estimates of some of the soil properties that affect engineering work.

The estimated rates of permeability refer to the movement of water through the soils in their undisturbed state. The rates depend largely on the texture and structure of the soils.

Available water capacity is approximately the amount of capillary water in the soils at field capacity. When a soil is at the wilting point of common crops, this amount of water will wet the soil material described to a depth of 1 inch without deeper percolation.

Reaction, which indicates the degree of acidity or alkalinity of the soils, is expressed in pH values.

Salinity of the soil is based on the electrical conductivity of the saturated soil extract, expressed in millimhos per centimeter at 25° C. It affects the stability of the soil material for construction and indicates the corrosivity of the soil material to other materials.

TABLE 7.—*Estimated*

Soil series and map symbols	Depth from surface	Classification		
		USDA	Unified	AASHO
	In.			
Alligator:				
(AaA, AaB)	0 to 12	Silt loam	ML–CL	A–7
	12 to 44	Silty clay	MH–CH	A–7
	44 to 58	Silty clay loam	MH–CH	A–7
(AcA)	0 to 10	Silty clay loam	CH	A–7
	10 to 55	Clay	CH	A–7
Amagon (Am, Ar)	0 to 28	Silt loam	ML or CL	A–4
(For Grubbs part of Ar, see Grubbs series.)	28 to 46	Loam	ML–CL	A–4
	46 to 52	Very fine sandy loam	ML or SM	A–2, A–4
Beulah (BbC, BbU)	0 to 8	Fine sandy loam	ML or SM	A–4
(For Bruno part of these units, see Bruno series.)	8 to 52	Fine sandy loam	ML or SM	A–2 or A–4
Bosket (BkA, BkC, BkU)	0 to 8	Fine sandy loam	SM	A–4
	8 to 34	Sandy clay loam	SM–SC	A–4
	34 to 72	Fine sandy loam	SM	A–4
Bowdre (BoA, BoU)	0 to 9	Silty clay loam	CL	A–6
	9 to 22	Loam	ML or CL	A–4 or A–6
	22 to 33	Silt loam	ML or CL	A–4
	33 to 52	Silty clay loam	CL	A–6
Bruno (BrC, BrU)	0 to 7	Loamy fine sand to sandy loam	SM	A–2 or A–4
	7 to 52	Fine sand	SM	A–2 or A–4
Calhoun (Ca)	0 to 13	Silt loam	ML	A–4
	13 to 52	Silty clay loam	CL or ML	A–4 or A–6
Calloway (CIA, CIB)	0 to 25	Silt loam	ML or CL	A–4
	25 to 52	Silty clay loam	CL	A–6
Commerce:				
(CmU)	0 to 13	Fine sandy loam	ML or SM	A–2 or A–4
	13 to 32	Silt loam	ML or CL	A–4
	32 to 52	Silty clay loam	ML or CL	A–6
(CoU)	0 to 13	Silt loam	ML or CL	A–4
	13 to 26	Silty clay loam	ML or CL	A–6
	26 to 52	Silt loam	ML or CL	A–4
Crowley (CrA, CrB)	0 to 21	Silt loam	ML or CL	A–4
(For Hillemann part of these units, see Hillemann series.)	21 to 36	Silty clay loam	CL	A–6 or A–7
	36 to 72	Silt loam	ML or CL	A–4
Dubbs:				
(DbA, DbU)	0 to 7	Fine sandy loam	ML or SM	A–2 or A–4
	7 to 25	Loam	ML or CL	A–4 or A–6
	25 to 40	Very fine sandy loam	ML or SM	A–2 or A–4
	40 to 52	Loamy fine sand	SM	A–2 or A–4
(DsA, DsB)	0 to 12	Silt loam	ML or CL	A–4
	12 to 23	Silt loam	CL	A–4 or A–6
	23 to 39	Clay loam	CL	A–6
	39 to 52	Silt loam	ML or CL	A–4

Shrink-swell potential indicates the volume change to be expected when soil material changes in moisture content. In general, soils classed as CH and A-7 have high shrink-swell potential. Clean sand and most other nonplastic materials have low shrink-swell potential.

Engineering interpretations

Table 8 lists, for each soil in Woodruff County, interpretations of characteristics that affect suitability for specific engineering purposes.

Clay mineralogy of selected soils and the effect on engineering uses [5]

Many kinds of clay occur in soils, and their properties may vary widely. The presence of clay in soils is important in soil engineering because clay influences the retention and movement of water and, consequently, the stability of soils as foundation material. Studies of clay in soils are useful in predicting the performance of soils as engineering material. Also, they may disclose some unusual

[5] By M. E. HORN, associate professor, and W. R. COSTON, graduate assistant, University of Arkansas Agricultural Experiment Station.

engineering properties of the soils

Percentage passing sieve—			Permeability	Available water capacity	Reaction	Salinity	Shrink-swell potential
No. 4	No. 10	No. 200					
			In./hr.	*In./in. of soil*	*pH*		
100	100	85 to 100	<0.2	0.19	5.0 to 6.0	None	Moderate.
100	100	95 to 100	<0.2	.19	4.5 to 5.0	None	Very high.
100	100	90 to 100	<0.2	.19	4.5 to 5.0	None	Very high.
100	100	90 to 100	<0.2	.19	5.5 to 6.0	None	Very high.
100	100	95 to 100	<0.2	.19	4.5 to 5.0	None	Very high.
100	100	62 to 95	0.2 to 0.63	.22	5.1 to 5.5	None	Low.
100	100	65 to 85	0.63 to 2.0	.21	5.1 to 5.5	None	Low.
100	100	30 to 85	0.63 to 2.0	.22	5.1 to 5.5	None	Low.
100	100	30 to 85	2 to 6.3	.14	5.0 to 5.5	None	Low.
100	100	30 to 85	2 to 6.3	.14	5.0 to 5.2	None	Low.
100	100	40 to 50	0.63 to 2.0	.15	5.0 to 6.0	None	Low.
100	100	35 to 45	0.2 to 0.63	.17	5.0 to 6.0	None	Low.
100	100	35 to 40	0.63 to 2.0	.15	5.0 to 6.0	None	Low.
100	100	80 to 100	0.2 to 0.63	.21	6.0 to 6.5	None	Moderate.
100	100	50 to 77	0.63 to 2.0	.17	5.5 to 6.0	None	Low.
100	100	80 to 100	0.63 to 2.0	.22	5.5 to 6.0	None	Low.
100	100	80 to 100	0.2 to 0.63	.21	5.5 to 6.0	None	Moderate.
100	100	10 to 50	>6.3	.08	6.0 to 7.0	None	Low.
100	100	15 to 50	>6.3	.08	6.0 to 7.0	None	Low.
100	100	60 to 100	0.63 to 2.0	.23	4.5 to 5.5	None	Low.
100	100	80 to 100	0.2 to 0.63	.21	4.5 to 5.5	None	Moderate.
100	100	90 to 100	0.63 to 2.0	.23	4.5 to 5.5	None	Low.
100	100	90 to 100	0.2 to 0.63	.21	4.5 to 5.5	None	Moderate.
100	100	30 to 85	0.63 to 2.0	.15	6.0 to 7.5	None	Low.
100	100	60 to 100	0.63 to 2.0	.22	6.0 to 7.5	None	Low.
100	100	80 to 100	0.2 to 0.63	.21	6.0 to 7.5	None	Moderate.
100	100	60 to 100	0.2 to 0.63	.22	6.0 to 7.5	None	Low.
100	100	80 to 100	0.2 to 0.63	.21	6.0 to 7.5	None	Moderate.
100	100	60 to 100	0.63 to 2.0	.22	6.0 to 7.5	None	Low.
100	100	90 to 100	0.2 to 0.63	.23	5.0 to 5.5	None	Low.
100	100	90 to 100	<0.2	.19	5.0 to 6.0	Moderate	Moderate.
100	100	90 to 100	0.2 to 0.63	.23	5.5 to 6.5	High	Low.
100	100	30 to 85	0.63 to 2.0	.15	5.6 to 6.0	None	Low.
100	100	50 to 80	0.63 to 2.0	.17	5.6 to 5.0	None	Low.
100	100	30 to 85	0.63 to 2.0	.21	5.6 to 6.0	None	Low.
100	100	10 to 50	>6.3	.08	5.6 to 6.0	None	Low.
100	100	60 to 100	0.63 to 2.0	.22	5.5 to 6.2	None	Low.
100	100	60 to 100	0.63 to 2.0	.23	5.5 to 6.2	None	Low.
100	100	55 to 100	0.63 to 2.0	.17	5.5 to 6.2	None	Moderate.
100	100	60 to 100	0.63 to 2.0	.22	5.5 to 6.2	None	Low.

TABLE 7.—*Estimated engineering*

Soil series and map symbols	Depth from surface	Classification		
		USDA	Unified	AASHO
	In.			
Dundee:				
(DuA, DuB, DuU)	0 to 10	Fine sandy loam	ML or SM	A-2 or A-4
	10 to 40	Silty clay loam	ML, CL, or SM	A-2, A-4, or A-6
	40 to 52	Loam	ML or CL	A-4 or A-6
(DvA, DvU)	0 to 18	Silt loam	ML or CL	A-4
	18 to 32	Silty clay loam	CL	A-6
	32 to 52	Fine sandy loam	ML or SM	A-2 or A-4
Foley	0 to 8	Silt loam	ML	A-7
	8 to 22	Silt loam	ML or CL	A-7
	22 to 42	Silty clay loam	CH	A-7
	42 to 72	Silt loam	CH	A-7
Forestdale (Fo)	0 to 33	Silty clay loam	CL	A-6
	33 to 42	Silt loam	ML or CL	A-4, A-6
Grenada (GaB, GaC, GaC2)	0 to 4	Silt loam	ML or CL	A-4
	4 to 12	Silt loam	ML or CL	A-4
	12 to 34	Silty clay loam	CL	A-6
	34 to 52	Silt loam	ML or CL	A-4
Grubbs (GbA, GbB, Gf)	0 to 5	Silt loam	ML or CL	A-4
(For Foley part of Gf, see Foley series.)	5 to 25	Silty clay	CL or CH	A-7
	25 to 42	Silty clay loam	CL	A-6
	42 to 52	Silt loam	ML or CL	A-4
Henry (He)	0 to 22	Silt loam	ML or CL	A-4
	22 to 38	Silty clay loam	CL	A-6
	38 to 55	Silt loam	ML or CL	A-4
	55 to 103	Silty clay loam	CL	A-6
Hillemann	0 to 21	Silt loam	ML	A-4
	21 to 36	Silty clay loam	CL	A-6
	36 to 72	Silt loam	ML–CL	A-6
Lafe (Lf)	0 to 8	Silt loam	ML	A-4
(For Foley part of this unit, see Foley series.)	8 to 27	Clay loam	CL	A-6
	27 to 39	Loam	CL	A-4 or A-6
	39 to 52	Sandy loam	SM or ML	A-4
McCrory (Mc)	0 to 15	Fine sandy loam	ML	A-4
	15 to 43	Loam	ML or CL	A-4
	43 to 52	Fine sandy loam	ML	A-4
Mhoon:				
(Mh)	0 to 15	Fine sandy loam	ML or SM	A-2 or A-4
	15 to 52	Sandy clay loam	SM, ML, or CL	A-2, A-4, or A-6
(Mn)	0 to 7	Sandy clay loam	SM or CL	A-2, A-4, or A-6
	7 to 23	Sandy clay loam	SM or CL	A-2, A-4, or A-6
	23 to 52	Sandy clay	SC or CH	A-6 or A-2
Patterson (PaA, PaU)	0 to 32	Loamy fine sand	SM	A-2 or A-4
	32 to 52	Loamy fine sand	SM	A-2 or A-4
Robinsonville (Ro)	0 to 28	Fine sandy loam	ML or SM	A-2 or A-4
	28 to 55	Loam	ML	A-4
Sharkey:				
(ShA, ShU)	0 to 52	Clay	MH or CH	A-7
(SkA, SkU, Sm)	0 to 6	Silty clay loam	MH or CH	A-7
(For Mhoon part of Sm, see Mhoon series.)	6 to 52	Clay	MH or CH	A-7
Tuckerman (Tu)	0 to 18	Fine sandy loam	ML or SM	A-2 or A-4
	18 to 34	Sandy clay loam	ML, CL, or SM	A-2, A-4, or A-6
	34 to 52	Fine sandy loam	ML or SM	A-2 or A-4
Zachary:				
(Za)	0 to 25	Sandy loam	ML or CL	A-4
	25 to 52	Silty clay loam	ML or CL	A-4 or A-6
(Zc)	0 to 5	Silty clay loam	CL	A-6
	5 to 30	Silt loam	ML or CL	A-4
	30 to 52	Silty clay loam	CL	A-6

properties of the soils—Continued

Percentage passing sieve—			Permeability	Available water capacity	Reaction	Salinity	Shrink-swell potential
No. 4	No. 10	No. 200					
			In./hr.	*In./in. of soil*	*pH*		
100	100	30 to 85	0.63 to 2.0	0.15	4.5 to 6.0	None	Low.
100	100	30 to 85	0.63 to 2.0	.15	4.5 to 6.0	None	Moderate.
100	100	50 to 80	0.63 to 2.0	.17	4.5 to 6.0	None	Low.
100	100	60 to 100	0.2 to 0.63	.22	4.5 to 6.0	None	Low.
100	100	80 to 100	0.2 to 0.63	.21	4.5 to 6.0	None	Moderate to high.
100	100	30 to 85	0.63 to 2.0	.15	4.5 to 6.0	None	Low.
100	100	85 to 100	0.63 to 2.0	.23	5.0 to 6.0	None	Low.
100	100	85 to 100	0.2 to 0.63	.19	5.5 to 6.0	Moderate	Low.
100	100	85 to 100	<0.2	.18	6.0 to 8.0	High	Moderate.
100	100	85 to 100	<0.2	.19	7.5 to 8.5	High	Low.
100	100	80 to 100	0.2 to 0.63	.21	5.1 to 5.5	None	Moderate.
100	100	60 to 95	0.2 to 0.63	.22	5.1 to 5.5	None	Low.
100	100	60 to 100	0.63 to 2.0	.22	4.5 to 5.0	None	Low.
100	100	60 to 100	0.63 to 2.0	.22	4.5 to 5.0	None	Low.
100	100	60 to 100	0.2 to 0.63	.17	5.0 to 5.5	None	Moderate.
100	100	60 to 100	0.63 to 0.2	.20	5.0 to 5.5	None	Low.
100	100	60 to 100	0.63 to 2.0	.23	4.5 to 5.0	None	Low.
100	100	80 to 100	<0.2	.19	5.0 to 5.5	None	High.
100	100	80 to 100	0.2 to 0.63	.21	5.0 to 5.5	High	Moderate.
100	100	60 to 100	0.63 to 0.2	.23	5.5 to 6.0	High	Low.
100	100	90 to 100	0.63 to 2.0	.23	4.5 to 5.0	None	Low.
100	100	90 to 100	<0.2	.21	5.0 to 5.5	None	Moderate.
100	100	90 to 100	0.2 to 0.63	.23	4.5 to 5.0	None	Low.
100	100	90 to 100	<0.2	.21	4.5 to 5.5	None	Moderate.
100	100	90 to 100	0.2 to 0.63	.23	5.0 to 5.5	None	Low.
100	100	90 to 100	<0.2	.19	5.0 to 6.0	Moderate	Moderate.
100	100	90 to 100	0.2 to 0.63	.23	5.5 to 6.5	High	Low.
100	100	80 to 100	0.2 to 0.63	.23	5.0 to 7.0	Moderate	Low.
100	100	55 to 95	<0.2	.14	7.5 to 8.5	High	Low.
100	100	50 to 80	0.2 to 0.63	.14	8.0 to 9.0	Very high	Low.
100	100	38 to 85	2.0 to 6.3	.14	8.0 to 9.0	Very high	Low.
100	100	85 to 100	0.63 to 2.0	.12	4.5 to 5.5	None	Low.
100	100	85 to 100	0.63 to 2.0	.16	5.5 to 8.5	High	Low.
100	100	85 to 100	>6.3	.08	5.5 to 7.5	Moderate	Low.
100	100	30 to 85	0.63 to 2.0	.15	6.5 to 7.0	None	Low.
100	100	20 to 65	0.2 to 0.63	.17	6.5 to 7.0	None	Moderate.
100	100	20 to 65	0.2 to 0.63	.17	6.5 to 7.0	None	Moderate.
100	100	20 to 65	0.2 to 0.63	.17	6.5 to 7.0	None	Moderate.
100	100	20 to 65	<0.2	.19	6.5 to 7.0	None	Very high.
100	100	10 to 40	>6.3	.08	4.5 to 5.0	None	Low.
100	100	10 to 50	>6.3	.08	5.0 to 5.5	None	Low.
100	100	30 to 85	0.63 to 2.0	.22	6.0 to 6.5	None	Low.
100	100	50 to 80	0.63 to 2.0	.22	6.0 to 6.5	None	Low.
100	100	90 to 100	<0.2	.19	6.0 to 7.0	None	Very high.
100	100	90 to 100	<0.2	.19	6.0 to 6.5	None	Very high.
100	100	90 to 100	<0.2	.19	6.0 to 6.5	None	Very high.
100	100	30 to 85	0.63 to 2.0	.15	5.0 to 5.5	None	Low.
100	100	20 to 65	0.2 to 0.63	.17	5.0 to 5.5	None	Moderate.
100	100	30 to 85	0.63 to 2.0	.15	5.0 to 5.5	None	Low.
100	100	60 to 100	0.63 to 2.0	.23	4.5 to 5.0	None	Low.
100	100	80 to 100	0.2 to 0.63	.21	5.0 to 5.5	None	Moderate.
100	100	80 to 100	0.2 to 0.63	.21	4.5 to 5.0	None	Moderate.
100	100	60 to 100	0.63 to 2.0	.23	5.0 to 5.5	None	Low.
100	100	80 to 100	0.2 to 0.63	.21	5.0 to 5.5	None	Moderate.

TABLE 8.—*Engineering*

Soil series and map symbols	Suitability of soil material for road subgrade and fill	Suitability as a source of—		Suitability for winter grading
		Topsoil	Sand and gravel	
Alligator (AaA, AaB, AcA)	Poor	Poor	Not suitable	Poor: poor drainage; large amount of clay.
Amagon (Am, Ar) (For Grubbs part of Ar, see Grubbs series.)	Fair	Poor	Not suitable	Poor: poor drainage
Beulah (BbC, BbU) (For Bruno part of these units, see Bruno series.)	Fair	Good	Good for sand; not suitable for gravel.	Good: good drainage
Bosket (BkA, BkC, BkU)	Good	Good	Fair for sand; not suitable for gravel.	Good: good drainage
Bowdre (BoA, BoU)	Poor	Poor	Poor for sand; not suitable for gravel.	Poor: flooding
Bruno (BrC, BrU)	Fair: poorly graded	Poor	Good for sand; not suitable for gravel.	Good: good drainage
Calhoun (Ca)	Poor	Fair	Not suitable	Poor: poor drainage; seasonal high water table.
Calloway (ClA, ClB)	Fair	Fair	Not suitable	Poor: somewhat poor drainage; seasonal high water table.
Commerce (CmU, CoU)	Fair to good	Good	Not suitable	Fair: somewhat poor drainage; seasonal high water table; occasional flooding.
Crowley (CrA, CrB) (For Hillemann part of these units, see Hillemann series.)	Poor	Fair	Not suitable	Poor: poor drainage; seasonal high water table.
Dubbs (DbA, DbU, DsA, DsB)	Good	Fair	Fair for sand; not suitable for gravel.	Good: good drainage
Dundee (DuA, DuB, DuU, DvA, DvU).	Fair	Fair	Poor for sand; not suitable for gravel.	Fair: somewhat poor drainage; seasonal high water table.
Foley	Poor	Fair	Not suitable	Poor: poor drainage; seasonal high water table.
Forestdale (Fo)	Poor	Poor	Not suitable	Poor: poor drainage; seasonal high water table.
Grenada (GaB, GaC, GaC2)	Fair	Fair	Not suitable	Fair: moderately good drainage.

interpretations

Soil features affecting engineering practices					
Farm ponds and reservoirs		Dikes and levees	Land leveling	Agricultural drainage	Irrigation
Reservoir area	Embankment				
Seasonal high water table.	Shrinking, swelling, and cracking; low strength and stability.	Low strength and stability.	Heavy clay texture; only limited cuts advisable.	Very slow internal drainage; slow runoff.	Slow intake rate; moderate available water capacity.
Seasonal high water table.	Silty material; low strength and stability.	Silty material; low strength and stability.	Seasonal high water table.	Seasonal high water table; slow internal drainage; slow runoff.	Slow intake rate.
Rapid permeability; sandy material.	Low strength; piping; rapid permeability.	Low strength; piping; rapid permeability.	No unfavorable features.	Good drainage	Rapid intake rate; low available water capacity.
High seepage rate; sandy material below a depth of 4 feet.	High seepage rate; sandy material below a depth of 4 feet; piping.	High seepage rate	No unfavorable features.	Good drainage	Moderate intake rate; moderate available water capacity.
Clay; sand below a depth of 16 inches.	Clay; sand below a depth of 16 inches.	Clay; sand below a depth of 16 inches.	Sand below a depth of 16 inches.	Seasonal high water table; ditchbanks slough if cut into sandy material; flooding.	Slow intake rate; high available water capacity.
Sand; high seepage rate.	Sand; high seepage rate; piping.	Sand; high seepage rate.	Not suitable; coarse sand.	Excessive drainage	Rapid intake rate.
Seasonal high water table.	Silty material; low strength and stability; piping; erodibility.	Silty material; low strength and stability.	Seasonal high water table.	Slow runoff; slow internal drainage; seasonal high water table.	Slow intake rate; moderate available water capacity.
Seasonal high water table.	Silty material; low strength and stability; piping; erodibility.	Silty material; low strength and stability.	Seasonal high water table; fragipan below a depth of 15 inches.	Fragipan restricts internal drainage; seasonal high water table.	Moderate intake rate; moderate available water capacity.
Stratified sandy and silty material; occasional flooding.	Stratified sandy and silty material.	Stratified sandy and silty material.	Occasional flooding	Seasonal high water table; occasional flooding.	Moderate intake rate.
Seasonal high water table.	Silty material; low strength and stability; shrink-swell potential; erodibility.	Silty material; fair strength and stability.	Seasonal high water table.	Poor drainage; slow internal drainage; slow runoff.	Slow intake rate; moderate available water capacity.
High seepage rate; sandy material below a depth of 4 feet.	High seepage rate; sandy material below a depth of 4 feet.	High seepage rate	No unfavorable features.	Good drainage	Moderate intake rate; moderate available water capacity.
Sandy material below a depth of 3 feet.	Sandy material below a depth of 3 feet.	High seepage rate	Seasonal high water table.	Slow runoff; undulating.	Moderate intake rate; moderate available water capacity.
Large amount of sodium that may go into solution; high water table.	Erodible because of high dispersion; low strength and stability; piping.	Low strength and stability.	Only shallow cuts advisable; large amount of sodium below a depth of 20 inches.	Seasonal high water table; slow runoff; very slow internal drainage.	Slow intake rate; moderate available water capacity.
Seasonal high water table.	Clay material	Clay material	Seasonal high water table.	Seasonal high water table; slow internal drainage; slow runoff.	Slow intake rate; moderate available water capacity.
No unfavorable features.	High erodibility; silty material; low strength and stability.	High erodibility; silty material; low strength and stability.	Depth of cuts is limited on low slopes; fragipan below a depth of 20 inches.	Moderately good drainage; slopes.	Moderate intake rate; moderate available water capacity.

TABLE 8.—*Engineering*

Soil series and map symbols	Suitability of soil material for road subgrade and fill	Suitability as a source of—		Suitability for winter grading
		Topsoil	Sand and gravel	
Grubbs (GbA, GbB, Gf) (For Foley part of Gf, see Foley series.)	Poor	Poor	Not suitable	Very poor: poor drainage; large amount of clay; seasonal high water table.
Henry (He)	Poor	Fair	Not suitable	Poor: seasonal high water table.
Hillemann	Poor	Fair	Not suitable	Poor: somewhat poor drainage; seasonal high water table.
Lafe (Lf) (For Foley part of this unit, see Foley series.)	Poor	Poor	Not suitable	Poor: poor drainage; dispersion.
McCrory (Mc)	Poor	Poor	Not suitable	Poor: poor drainage
Mhoon (Mh, Mn)	Poor	Poor	Not suitable	Poor: poor drainage; flooding.
Patterson (PaA, PaU)	Fair: poorly graded	Poor	Fair for sand; not suitable for gravel.	Poor: poor drainage
Robinsonville (Ro)	Fair	Good	Fair for sand; not suitable for gravel.	Good
Sharkey (ShA, ShU, SkA, SkU, Sm) (For Mhoon part of Sm, see Mhoon series.)	Poor	Poor	Not suitable	Poor: poor drainage; flooding; large amount of clay.
Tuckerman (Tu)	Fair	Poor	Poor for sand; not suitable for gravel.	Poor: poor drainage; seasonal high water table.
Zachary (Za, Zc)	Poor	Poor	Not suitable	Poor: poor drainage; seasonal high water table; frequent flooding.

property of a soil that is important to engineering and that may not be disclosed by ordinary tests.

Samples of Amagon, Bosket, and Foley soils, which are extensive in Woodruff County, were collected and tested by chemical analysis, X-ray diffraction, and other analytical techniques according to standard procedures (*3*, *6*, *7*). The results of this analysis provide the basis for the clay mineralogy data presented in table 9.

The soils that were analyzed developed in alluvial sediments deposited by the White River and the ancestral Mississippi River (*4*). These sediments were transported from the upper Mississippi River valley and consisted of a variety of geologic materials.

In the fine silt fractions of the soils analyzed, feldspar and illite (including mica) are abundant. The proportion of feldspar is 18 to more than 50 percent; of illite, 15 to 40 percent; and of quartz, less than 50 percent, and in the Bosket soils no more than 15 percent. The coarse clay fractions contain chiefly vermiculite, illite, montmorillonite, and kaolinite. Illite and kaolinite are generally most abundant in the uppermost horizon, probably because they remain in place while the smaller particles of vermiculite and montmorillonite move downward. In the medium clay and fine clay fractions, montmorillonite and amorphous materials are dominant.

The sand fractions of the soils analyzed contain a variety of primary minerals, dominantly feldspar, amphibole, mica, and quartz.

Some properties of each of the soils studied in Woodruff County are summarized in the following paragraphs.

interpretations—Continued

Soil features affecting engineering practices					
Farm ponds and reservoirs		Dikes and levees	Land leveling	Agricultural drainage	Irrigation
Reservoir area	Embankment				
Seasonal high water table.	Shrinking, swelling, and cracking.	Shrinking, swelling, and cracking.	Heavy clay subsoil..	Slow internal drainage; slow runoff.	Slow intake rate; moderate available water capacity.
Seasonal high water table.	Silty material; low stability; piping; erodibility.	Silty material; low stability.	Seasonal high water table; fragipan below a depth of 30 inches.	Slow internal drainage; slow runoff.	Slow intake rate; moderate available water capacity.
Seasonal high water table.	Silty material; low stability.	Silty material; low stability.	Depth of cuts limited to less than 12 inches; sodium below a depth of 24 inches.	Slow internal drainage; slow runoff.	Slow intake rate; moderate available water capacity.
Large amount of sodium that may go into solution.	High erodibility; low strength and stability; piping.	High erodibility; low stability.	Large amount of sodium below a depth of 10 inches.	Large amount of sodium.	Costs too high for benefits; low crop yields; large quantity of sodium.
Sandy material; seasonal high water table.	Low strength and stability.	Low strength and stability.	Large amount of sodium below a depth of 20 inches.	Slow internal drainage; slow runoff.	Slow intake rate; moderate available water capacity.
Seasonal high water table.	Low strength and stability.	Low strength and stability.	Seasonal high water table.	Seasonal high water table; flooding.	Slow intake rate.
High seepage rate....	Low strength; piping; excessive sand.	Low strength; piping; excessive sand.	Seasonal high water table.	Seasonal high water table.	Moderate infiltration rate; moderate available water capacity.
High seepage rate; flooding.	High seepage rate..	High seepage rate..	Flooding.....	Good drainage.....	Moderate available water capacity; moderate infiltration rate.
Flooding where not protected by levees.	Shrinking, swelling, and cracking; low strength and stability.	Shrinking, swelling, and cracking; low strength and stability.	Flooding.....	Flooding; slow internal drainage; slow runoff.	Slow infiltration rate.
Sandy material; seasonal high water table.	Low strength and stability.	Low strength and stability.	Seasonal high water table.	Slow internal drainage; slow runoff; seasonal high water table.	Slow intake rate; moderate available water capacity.
Frequent flooding....	Silty material; low strength and stability.	Silty material; low strength and stability.	Seasonal high water table; frequent flooding.	Frequent flooding; high water table.	Slow intake rate; moderate available water capacity.

Also, there is a brief discussion of the relationship between the clay mineralogy and the engineering properties.

Amagon silt loam.—The three samples of this poorly drained soil came from a profile where silt loam extends to a depth of 28 inches. They contain much the same minerals, but the one from the B21 horizon contains more montmorillonite than the others. The clay fraction also contains a large amount of vermiculite, which has a higher cation-exchange capacity than montmorillonite.

In engineering table 6, page 36, the AASHO classification of the upper horizons in the modal profile is A–4(8) and that of the lower horizon is A–7–6(12). This difference in classification is probably caused by the increase in clay content from about 15 percent in the upper horizons to 24 percent in the lower horizon. The stabilization of this soil may require more lime than that of other soils with a comparable content of clay, because of the drastic changes in chemical environment that must take place in soils that have high cation-exchange capacity before a significant change in soil behavior can take place.

Bosket fine sandy loam.—This soil has a clay content, dominantly coarse clay, that reaches a maximum of about 20 percent in the 14- to 34-inch layer. It also contains silt, very fine sand, and fine sand (USDA size limits). More than 40 percent of the soil material passes the 200-mesh sieve. Permeability is good.

This soil has good stability as subgrade material. It is not likely to expand more than a little, because one-third to one-half of its clay content is made up of nonexpanding minerals. It does contain a large amount of mica flakes

TABLE 9.—*Mineralogy of*

[Dashed line indicates

Soil	Sample No. S-63-Ark-74-	Horizon	Depth from surface	Fine silt (5–2 microns)		Coarse clay (2 microns–0.2 micron)	
				Percentage of sample	Mineralogy of sample [1]	Percentage of sample	Mineralogy of sample [1]
			In.				
Amagon silt loam.	6-1	Ap1	0 to 7	6.4	46 percent quartz, 20 percent illite, 12 percent plagioclase feldspars, 12 percent potassium feldspars, 5 percent kaolinite, 3 percent vermiculite, 2 percent chlorite.	11.0	45 percent vermiculite, 27 percent illite, 13 percent montmorillonite, 10 percent kaolinite, 5 percent quartz.
	6-4	B1	16 to 28	3.5	30 percent quartz, 18 percent illite, 15 percent vermiculite, 12 percent plagioclase feldspars, 12 percent potassium feldspars, 8 percent kaolinite, 5 percent chlorite.	8.8	45 percent vermiculite, 20 percent montmorillonite, 20 percent illite, 5 percent interstratified illite and vermiculite, 5 percent kaolinite, 5 percent quartz.
	6-5	B21	28 to 40	3.4	30 percent quartz, 20 percent illite, 20 percent plagioclase feldspars, 12 percent potassium feldspars, 10 percent kaolinite, 2 percent chlorite, 6 percent vermiculite.	16.7	30 percent vermiculite, 40 percent montmorillonite, 20 percent illite, 10 percent interstratified illite and montmorillonite.
Bosket fine sandy loam.	2-1	Ap	0 to 8	2.3	40 percent illite, 15 percent quartz, 15 percent potassium feldspars, 12 percent plagioclase feldspars, 10 percent kaolinite, 6 percent vermiculite, 2 percent chlorite.	3.2	50 percent illite, 20 percent kaolinite, 15 percent interstratified illite and vermiculite, 10 percent vermiculite, 5 percent quartz.
	2-3	B2	14 to 34	2.6	35 percent illite, 25 percent vermiculite, 10 percent kaolinite, 10 percent plagioclase feldspars, 8 percent potassium feldspars, 7 percent interstratified illite and vermiculite, 5 percent quartz.	13.5	35 percent vermiculite, 35 percent montmorillonite, 15 percent illite, 15 percent kaolinite.
	2-4	C1	34 to 72	1.8	33 percent vermiculite, 30 percent illite, 12 percent plagioclase feldspars, 10 percent potassium feldspars, 10 percent kaolinite, 3 percent quartz, 2 percent chlorite.	7.4	35 percent montmorillonite, 30 percent vermiculite, 23 percent illite, 10 percent kaolinite, 2 percent quartz.
Foley silt loam.	4-1	A1	0 to 5	11.8	40 percent quartz, 18 percent illite, 15 percent plagioclase feldspars, 12 percent potassium feldspars, 8 percent kaolinite, 5 percent vermiculite, 2 percent chlorite.	16.7	45 percent illite, 20 percent kaolinite, 15 percent interstratified illite and vermiculite, 10 percent vermiculite, 5 percent montmorillonite, 5 percent quartz.
	4-5	B22tg	22 to 42	10.2	35 percent illite, 23 percent quartz, 15 percent plagioclase feldspars, 12 percent potassium feldspars, 10 percent kaolinite, 5 percent vermiculite.	24.6	40 percent montmorillonite, 27 percent illite, 27 percent kaolinite, 5 percent quartz, less than 1 percent potassium feldspars, less than 1 percent plagioclase feldspars.

See footnotes at end of table.

selected soils

absence of data]

Medium clay (0.2–0.08 micron)		Fine clay (less than 0.08 micron)		Total percentage of clay [2]	Calculated cation-exchange capacity of total clay	Percentage of free iron as Fe_2O_3
Percentage of sample	Mineralogy of sample [1]	Percentage of sample	Mineralogy of sample [1]			
					Meq./100 gm. of soil	
5. 1	50 percent montmorillonite, 36 percent interstratified illite and montmorillonite, 10 percent amorphous materials, 4 percent kaolinite.	1. 3	60 percent montmorillonite, 40 percent amorphous materials.	17. 4	99	1. 0
5. 4	50 percent montmorillonite, 25 percent interstratified illite and montmorillonite, 20 percent amorphous materials, 3 percent illite, 2 percent kaolinite.	(3)	----------	14. 2	68	1. 3
4. 2	65 percent montmorillonite, 16 percent amorphous materials, 14 percent interstratified illite and montmorillonite, 3 percent illite, 2 percent kaolinite.	3. 0	68 percent montmorillonite, 32 percent amorphous materials.	23. 9	58	1. 4
3. 7	33 percent amorphous materials, 20 percent kaolinite, 18 percent illite, 16 percent montmorillonite, 13 percent vermiculite.	. 5	60 percent amorphous materials, 40 percent montmorillonite.	7. 4	79	. 7
4. 0	60 percent montmorillonite, 22 percent vermiculite, 8 percent amorphous materials, 5 percent illite, 5 percent kaolinite.	. 8	50 percent montmorillonite, 50 percent amorphous materials.	18. 3	54	2. 1
6. 1	57 percent montmorillonite, 15 percent illite, 13 percent amorphous materials, 10 percent interstratified illite and montmorillonite, 5 percent vermiculite.	. 4	50 percent montmorillonite, 50 percent amorphous materials.	13. 9	89	1. 4
1. 5	43 percent montmorillonite, 20 percent kaolinite, 20 percent illite, 17 percent amorphous materials.	4. 7	95 percent montmorillonite, 5 percent amorphous materials.	22. 9	50	. 7
10. 2	63 percent montmorillonite, 23 percent illite, 10 percent kaolinite, 4 percent amorphous materials.	11. 7	95 percent montmorillonite, 5 percent amorphous materials.	46. 5	35	. 4

TABLE 9.—*Mineralogy of*

Soil	Sample No. S–63–Ark–74–	Horizon	Depth from surface	Fine silt (5–2 microns)		Coarse clay (2 microns–0.2 micron)	
				Percentage of sample	Mineralogy of sample [1]	Percentage of sample	Mineralogy of sample [1]
Foley silt loam—Continued.	4–6	C	*In.* 42 to 72	26. 1	35 percent quartz, 25 percent plagioclase feldspars, 20 percent potassium feldspars, 15 percent illite, 5 percent vermiculite.	26. 9	45 percent montmorillonite, 27 percent illite, 15 percent kaolinite, 11 percent vermiculite, 2 percent quartz.

[1] Illite includes all 10-angstrom micas. Estimates of illite are based on the K_2O determination.
[2] The sum of the individual clay fractions includes losses due to handling and to removal of free iron, salts, and some amorphous

that cause reduced internal friction and stability if the water content is high. On the natural levees where this soil occurs, drainage is rarely a problem.

Foley silt loam.—This soil is somewhat poorly to poorly drained and contains a large amount of magnesium; consequently, it contains a large amount of montmorillonite. Because sodium is also abundant and because sodium accentuates the plasticity of montmorillonite clay, the plasticity indexes of the three horizons in the modal profile tested were 12, 34, and 29. Because the clay is dispersed by sodium and because montmorillonite clay swells to a high degree, permeability is very slow.

This soil is not suitable as a structural material, because of its extreme plasticity. In addition, obtaining adequate drainage is difficult, even if the soil has been stabilized through the use of lime.

Nonfarm Uses of the Soils

Table 10 sets forth the limitations of the soils of Woodruff County for selected nonfarm uses. The degrees of lim-

TABLE 10.—*Degree and kind of limitation for*

Soil series and map symbol	Foundations of dwellings [1]	Septic tank filter fields	Recreation
			Campsites
Alligator (AaA, AaB, AcA)	Severe: high water table; poor drainage; high shrink-swell potential; low bearing capacity.	Severe: high water table; poor drainage; slow percolation.	Severe: poor trafficability
Amagon (Am, Ar) (For Grubbs part of Ar, see Grubbs series.)	Severe: low bearing capacity; high shrink-swell potential; high water table; poor drainage.	Severe: slow percolation; high water table; poor drainage.	Severe: poor trafficability
Beulah (BbC, BbU) (For Bruno part of these units, see Bruno series.)	Slight	Slight	Slight
Bosket (BkA, BkC, BkU)	Slight	Slight	Slight
Bowdre (BoA, BoU)	Moderate: moderate shrink-swell potential; high water table.	Moderate: high water table	Moderate: moderate trafficability.
Bruno (BrC, BrU)	Slight	Slight	Moderate: poor trafficability
Calhoun (Ca)	Severe: high water table; poor drainage; low bearing capacity.	Severe: slow percolation; high water table; poor drainage.	Severe: poor trafficability
Calloway (CIA, CIB)	Moderate: high water table; somewhat poor drainage; low bearing capacity.	Severe: slow percolation; high water table; somewhat poor drainage.	Moderate: poor trafficability

See footnotes at end of table.

selected soils—Continued

Medium clay (0.2–0.08 micron)		Fine clay (less than 0.08 micron)		Total percentage of clay [2]	Calculated cation-exchange capacity of total clay	Percentage of free iron as Fe_2O_3
Percentage of sample	Mineralogy of sample [1]	Percentage of sample	Mineralogy of sample [1]			
4. 9	60 percent montmorillonite, 28 percent illite, 8 percent amorphous materials, 4 percent kaolinite.	3. 7	95 percent montmorillonite, 5 percent amorphous materials.	36. 5	*Meq./100 gm. of soil* 49	. 6

materials. These losses are offset, in part, by gains due to dispersion and attrition of the coarser particles and aggregates.
[3] Trace.

itation reflect all the features of the given soil, to a depth of 5 feet, that affect a particular use. *Slight* indicates that the limitation is not serious and is easily overcome; *moderate*, that the limitation generally can be corrected by practical means; and *severe*, that the limitation is difficult to overcome and that the use of the soil for the particular purpose is generally impractical.

The properties considered in evaluating the limitations for the uses listed in table 10 are as follows:

Foundations of dwellings: Percolation rate, natural drainage, depth to the water table, flood hazard, shrink-swell potential, bearing capacity, and suitability for grasses, shrubs, and trees. Ratings of bearing capacity are based on estimates of the maximum load that a soil can support when compacted. Specific values should not be applied to the ratings of bearing capacity in this table. Shrink-swell potential refers to expansion and contraction of a soil with changes in moisture content.

Septic tank filter fields: Permeability, percolation rate, natural drainage, depth to the water table, and flood hazard. A seasonal water table less than 4 feet below the surface constitutes a moderate to severe limitation for this

building sites, recreational facilities, and trafficways

Recreation—Continued		Light industry [1]	Trafficways
Picnic grounds	Intensive play areas		
Severe: poor trafficability	Severe: poor trafficability	Severe: low bearing capacity; high shrink-swell potential; high water table; poor drainage.	Severe: low traffic-supporting capacity; high water table; poor drainage.
Severe: poor trafficability	Severe: poor trafficability	Severe: low bearing capacity	Severe: high water table; poor drainage; low traffic-supporting capacity.
Slight	Slight	Slight to moderate: low bearing capacity.	Moderate: low traffic-supporting capacity.
Slight	Slight	Slight	Slight.
Moderate: moderate trafficability.	Moderate: moderate trafficability.	Moderate: low bearing capacity; moderate shrink-swell potential; high water table.	Moderate: low traffic-supporting capacity; high water table.
Moderate: poor trafficability	Moderate: poor trafficability	Slight on slopes of less than 5 percent and moderate on slopes of more than 5 percent.	Moderate; low traffic-supporting capacity.
Severe: poor trafficability	Severe: poor trafficability	Severe: high water table; poor drainage; low bearing capacity; corrosion potential.	Severe: high water table; poor drainage; low traffic-supporting capacity.
Moderate: poor trafficability	Severe: poor trafficability	Moderate: high water table; somewhat poor drainage; low bearing capacity; corrosion potential.	Moderate: low traffic-supporting capacity; high water table; somewhat poor drainage.

TABLE 10.—*Degree and kind of limitation for building*

Soil series and map symbol	Foundations of dwellings [1]	Septic tank filter fields	Recreation
			Campsites
Commerce (CmU, CoU)	Slight: moderately high water table; somewhat poor drainage.	Slight: moderately high water table; somewhat poor drainage.	Slight
Crowley (CrA, CrB) (For Hillemann part of these units, see Hillemann series.)	Moderate: moderate percolation; moderate shrink-swell potential; high water table; poor drainage.	Severe: moderate percolation; high water table; poor drainage.	Moderate: poor trafficability
Dubbs: (DbA, DbU)	Slight	Slight	Slight
(DsA, DsB)	Slight	Slight	Slight
Dundee (DuA, DuB, DuU, DvA, DvU).	Moderate: high water table; somewhat poor drainage; moderate shrink-swell potential.	Moderate to severe: slow percolation; high water table; somewhat poor drainage.	Moderate: poor trafficability
Foley	Severe: high water table; low bearing capacity.	Severe: slow percolation; high water table; somewhat poor drainage.	Moderate: poor trafficability
Forestdale (Fo)	Severe: low bearing capacity; high shrink-swell potential; high water table; poor drainage.	Severe: slow percolation; high water table; poor drainage.	Severe: poor trafficability
Grenada: (GaB)	Slight	Severe: slow percolation	Slight
(GaC, GaC2)	Slight	Severe: slow percolation	Moderate: slope
Grubbs (GbA, GbB, Gf) (For Foley part of Gf, see Foley series.)	Severe: low bearing capacity; high shrink-swell potential; high water table; somewhat poor drainage.	Severe: slow percolation; high water table; somewhat poor drainage.	Severe: poor trafficability
Henry (He)	Severe: high water table; poor drainage; low bearing capacity.	Severe: high water table; poor drainage; slow percolation.	Severe: poor trafficability
Hillemann	Moderate: high water table; somewhat poor drainage; moderate shrink-swell potential; low bearing capacity.	Severe: high water table; moderate percolation.	Moderate: poor trafficability
Lafe (Lf) (For Foley part of this unit, see Foley series.)	Severe: high water table; poor drainage; low bearing capacity; low productivity.	Severe: slow percolation; high water table; poor drainage; low productivity.	Severe: poor trafficability
McCrory (Mc)	Severe: high water table; low bearing capacity.	Severe: slow percolation; high water table; somewhat poor drainage.	Moderate: poor trafficability
Mhoon (Mh, Mn)	Severe: high water table; poor drainage; low bearing capacity.	Severe: high water table; poor drainage; slow percolation.	Severe: poor trafficability
Patterson (PaA, PaU)	Slight	Moderate: high water table; poor drainage; slow percolation.	Moderate: poor trafficability
Robinsonville (Ro)	Slight	Slight	Slight
Sharkey (ShA, ShU, SkA, SkU, Sm). (For Mhoon part of Sm, see Mhoon series.)	Severe: low bearing capacity; high shrink-swell potential; high water table; poor drainage.	Severe: slow percolation; high water table; poor drainage; frequent flooding.	Severe: poor trafficability

See footnote at end of table.

sites, recreational facilities, and trafficways—Continued

Recreation—Continued		Light industry [1]	Trafficways
Picnic grounds	Intensive play areas		
Slight	Slight	Moderate: low bearing capacity.	Moderate: low traffic-supporting capacity.
Moderate: poor trafficability	Severe: poor trafficability	Moderate: low bearing capacity; moderate shrink-swell potential; high water table; poor drainage.	Moderate: low traffic-supporting capacity; high water table; poor drainage.
Slight Slight	Slight Slight	Slight Slight	Slight. Slight.
Moderate: poor trafficability	Moderate: poor trafficability	Moderate: low bearing capacity; high water table; somewhat poor drainage; moderate shrink-swell potential.	Moderate: high water table; somewhat poor drainage; low traffic-supporting capacity.
Moderate: poor trafficability	Severe: poor trafficability	Moderate: high water table; somewhat poor drainage; low bearing capacity; corrosion potential.	Moderate: high water table; somewhat poor drainage; low traffic-supporting capacity.
Severe: poor trafficability	Severe: poor trafficability	Severe: low bearing capacity	Severe: high water table; ponding; low traffic-supporting capacity.
Slight Moderate: slope	Moderate: poor trafficability Moderate: slope	Slight Moderate: slope	Slight. Slight.
Severe: poor trafficability	Severe: poor trafficability	Severe: low bearing capacity; high shrink-swell potential; high water table; somewhat poor drainage; corrosion potential.	Severe: high shrink-swell potential; low traffic-supporting capacity; high water table; somewhat poor drainage.
Severe: poor trafficability	Severe: poor trafficability	Severe: high water table; poor drainage; low bearing capacity; corrosion potential.	Severe: low traffic-supporting capacity; high water table; poor drainage.
Moderate: poor trafficability	Severe: poor trafficability	Moderate: low bearing capacity; moderate shrink-swell potential; high water table; somewhat poor drainage; corrosion potential.	Moderate: low traffic-supporting capacity; high water table; somewhat poor drainage.
Severe: poor trafficability	Severe: poor trafficability	Severe: high water table; poor drainage; low bearing capacity; low productivity; corrosion potential.	Severe: high water table; poor drainage; low traffic-supporting capacity; corrosion potential.
Moderate: poor trafficability	Severe: poor trafficability	Moderate: high water table; somewhat poor drainage; low bearing capacity; corrosion potential.	Moderate: high water table; somewhat poor drainage; low traffic-supporting capacity.
Severe: poor trafficability	Severe: poor trafficability	Severe: high water table; poor drainage; low bearing capacity; moderate shrink-swell potential; frequent flooding.	Severe: high water table; poor drainage; low traffic-supporting capacity; flooding.
Moderate: poor trafficability	Moderate: poor trafficability	Moderate: high water table; poor drainage; low bearing capacity.	Moderate: low traffic-supporting capacity; high water table; poor drainage.
Slight	Slight	Slight	Moderate: moderate traffic-supporting capacity.
Severe: poor trafficability	Severe: poor trafficability	Severe: low bearing capacity; high shrink-swell potential; high water table; poor drainage; frequent flooding.	Severe: low traffic-supporting capacity; high water table; poor drainage; frequent flooding.

TABLE 10.—*Degree and kind of limitation for building*

Soil series and map symbol	Foundations of dwellings [1]	Septic tank filter fields	Recreation
			Campsites
Tuckerman (Tu)	Severe: high water table; poor drainage; low bearing capacity.	Severe: high water table; poor drainage; slow percolation.	Severe: poor trafficability
Zachary (Za, Zc)	Severe: low bearing capacity; moderate shrink-swell potential; high water table; poor drainage; frequent flooding.	Severe: high water table; poor drainage; frequent flooding.	Severe: poor trafficability

[1] Engineers and others should not apply specific values to estimated bearing capacity.

use. A percolation rate slower than 75 minutes per inch constitutes a severe limitation, and a rate of between 45 and 75 minutes per inch a moderate limitation.

Recreation facilities: Trafficability, productivity, natural drainage, flood hazard, topography, accessibility, and feasibility of impounding water. Trafficability refers to movement of pedestrian, bicycle, and light vehicular traffic. Trafficability is no more than a slight limitation on loamy soils that are not likely to be flooded and have a water table at a depth of more than 30 inches during the periods of heavy use. On clayey soils, trafficability is a severe limitation.

Light-industry structures of less than three stories: Bearing capacity, shrink-swell potential, depth to the water table, flood hazard, natural drainage, topography, and corrosion potential.

Trafficways: Traffic-supporting capacity, topography, permeability, stability, shrink-swell potential, flood hazard, depth to the water table, and corrosion potential. Traffic-supporting capacity is the ability of the undisturbed soil to support moving loads.

The detailed soil map and table are guides for evaluating areas for the specified uses, but detailed onsite investigations are needed, because as much as 15 percent of an area designated on the map as a specific soil may consist of spots of other soils.

Formation and Classification of the Soils

This section discusses the factors of soil formation, the processes of soil formation, and the classification of the soils in Woodruff County by higher categories.

Factors of Soil Formation

Soil is formed by the interaction of climate, living organisms, parent material, and relief over a period of time. Each of these factors modifies the effect of the other four. Significant differences in any one of the factors result in differences in soil characteristics.

Climate and living organisms are the active forces in soil formation. Relief, mainly by its influence on runoff and temperature, modifies the effect of climate and living organisms. The parent material also affects the kind of profile that can be formed and, in extreme cases, determines it almost entirely. Finally, time is needed for the changing of the parent material into soil.

Climate

The climate in Woodruff County is characterized by long hot humid summers, short mild winters, and abundant rainfall. It probably has not changed much while the soils have been forming. The climate is relatively uniform throughout the county and consequently does not account for significant differences among the soils.

The warm moist climate promotes rapid chemical reactions and rapid soil formation. Abundant rainfall makes a large amount of water available for the leaching of soluble and colloidal materials (*12*). Plant remains decompose rapidly, and the organic acids thus produced hasten the development of clay minerals and the removal of carbonates. Because the soil freezes only for short periods of time, soil formation continues almost the year around.

Living organisms

Native vegetation has had more influence than animal activity on soil formation in the county. Differences in native vegetation seem to be associated mainly with differences in drainage, and only the major differences are reflected to any extent in the characteristics of the soils.

On bottom lands the native vegetation consisted predominantly of hardwood trees. On dry sites, where the Bruno and Beulah soils formed, the trees were chiefly oak, pecan, ash, and elm. In swales and in low spots that are wet but not swampy, the principal trees were tupelo-gum, baldcypress, sweetgum, soft elm, hackberry, cottonwood, overcup oak, and willow oak, and the understory was a dense tangle of grapevines, lianas, and briers. Sharkey, Mhoon, Alligator, Amagon, Foley, Tuckerman, and Patterson soils formed in these places. On the flats between sloughs and bayous and in scattered areas on the high natural levees were canebrakes. The soils in these places are darkened by organic matter to a depth of as much as 12 inches. Among these are Bosket and Dundee soils.

On the uplands in the central and eastern parts of the county, the most common trees were oak, hickory, sweetgum, and ash. In the southeastern part of the county, grass may have grown in the area where Crowley and Hillemann soils formed.

sites, recreational facilities, and trafficways—Continued

Recreation—Continued		Light industry [1]	Trafficways
Picnic grounds	Intensive play areas		
Severe: poor trafficability	Severe: poor trafficability	Severe: low bearing capacity; high water table; poor drainage; low shrink-swell potential.	Severe: high water table; low traffic-supporting capacity.
Severe: poor trafficability	Severe: poor trafficability	Severe: low bearing capacity; high water table; poor drainage; frequent flooding; corrosivity.	Severe: high water table; poor drainage; frequent flooding; low traffic-supporting capacity.

With the development of agriculture in the county, man is influencing the formation of soils. By clearing forests, raising cultivated crops, introducing new plants, irrigating, leveling, controlling floods, and improving drainage, man is changing the direction of soil formation, but the results of these activities will probably not be evident for many centuries.

Parent material

The parent material of most of the soils in Woodruff County was alluvium deposited by the Mississippi River when it flowed in the channels now occupied by Bayou DeView, the Cache River, and the White River. This alluvium is a mixture of minerals derived from many kinds of soils, rock, and unconsolidated material, including glacial drift and loess. It washed downstream from the upper reaches of the Mississippi River basin, which extends from Montana to Pennsylvania, and has been reworked, in part, by the White River and the Cache River. This alluvium has also been mixed with loess-derived sediments carried downstream by the White River.

The sandy material that was deposited near the stream channel makes up the natural levees on which the Robinsonville and Commerce soils formed. The clayey material that was deposited in slack-water areas some distance away from the channel was the material in which Mhoon, Sharkey, Bowdre, and Alligator soils formed. Parts of former stream channels have been filled and are now wide, flat-bottomed depressions in which Amagon, Patterson, and Tuckerman soils formed. On the high terraces are broad shallow depressions, which may have been lakes. In these places are Foley, Grubbs, McCrory, and Lafe soils, which developed in material that contained large amounts of sodium and magnesium and have weakly to strongly expressed natric horizons (*5*).

On the plains east of Bayou DeView, the parent material was loess that in some places was as much as 8 feet thick. This material was originally part of the glacial drift in the northern part of the Mississippi River basin. The drift material was washed downstream and then, during dry periods, the silt-sized material was blown out of the streambeds (*20*) and deposited at higher elevations over old alluvium. Henry, Calhoun, Grenada, and Calloway soils formed where the loess deposit was as much as 4 feet thick.

In alluvium, textural differences are generally accompanied by some differences in chemical and mineralogical composition. The sandier sediments generally contain more quartz and less feldspar and ferromagnesian minerals than the finer textured sediments, and they commonly, but not always, contain smaller amounts of carbonates. The soils on the present flood plain of the White River are highly charged with cations and are rarely calcareous within 5 feet of the surface.

Generally, soils that formed in silty and sandy materials have less capacity for holding plant nutrients than those that formed in clay, but they are more productive because they can transmit more water and because they contain an abundance of minerals that weather easily and release nutrients for plants.

Relief

On the flood plains, which make up about 80 percent of Woodruff County, relief is characterized by level areas of slack-water clays and successions of undulating ridges and swales on natural levees. There are a few escarpments 10 to 20 feet high that were the banks of a river, but the total area of steep slopes and escarpments is negligible. Local differences in elevation are dominantly less than 8 feet. The slope is generally less than 3 percent.

Nubbin Ridge is between the Cache River and Bayou DeView in the southern part of the county. It is long and narrow and is made up of a succession of low, gently sloping ridges. The dominant slope range is 1 to 5 percent.

The loessal plains east of Bayou DeView, which make up about 20 percent of the county, consist of wide flats broken by low, gently sloping ridges. In this area is a complex of swales that are relict braided stream channels filled with loess or loess-derived sediments.

The elevation ranges from 165 to 225 feet on the flood plains, from 200 to 225 feet on Nubbin Ridge, and from 190 to 225 feet on the loessal plains.

Time

The length of time required for formation of soil depends largely upon the other factors of soil formation. Less time is generally required if the climate is warm and humid, the vegetation luxuriant, and the parent material fine textured. It seems probable that the sediments now forming the land surface in Woodruff County were deposited during and after the advances of the continental glaciers, the last of which was retreating from the North Central States about eleven thousand years ago.

On the smoother parts of the loessal plains and on the higher parts of the flood plains are soils that have clearly expressed horizons. Moderate intensity of development, evidence of the translocation of considerable clay, and the leaching of most of the free carbonates indicate that weathering has been going on for several thousand years. Dundee soils are among the older ones in these areas. On first bottoms along the present streams, the soil material is little more than raw alluvium, and only a moderate content of organic matter has accumulated in the uppermost few inches, because the parent materials have been in place too short a time for soils to form. Such areas receive fresh sediments each year. Except for their darkened surface layer, Commerce soils are good examples of the young soils in these areas.

Processes of Soil Formation

The soils in Woodruff County have horizons that developed through one or more of the following processes: (1) the accumulation of organic matter, (2) the leaching of calcium carbonates and bases, (3) the reduction and transfer of iron, and (4) the translocation of silicate clay minerals. In most of the soils, more than one of these processes was involved.

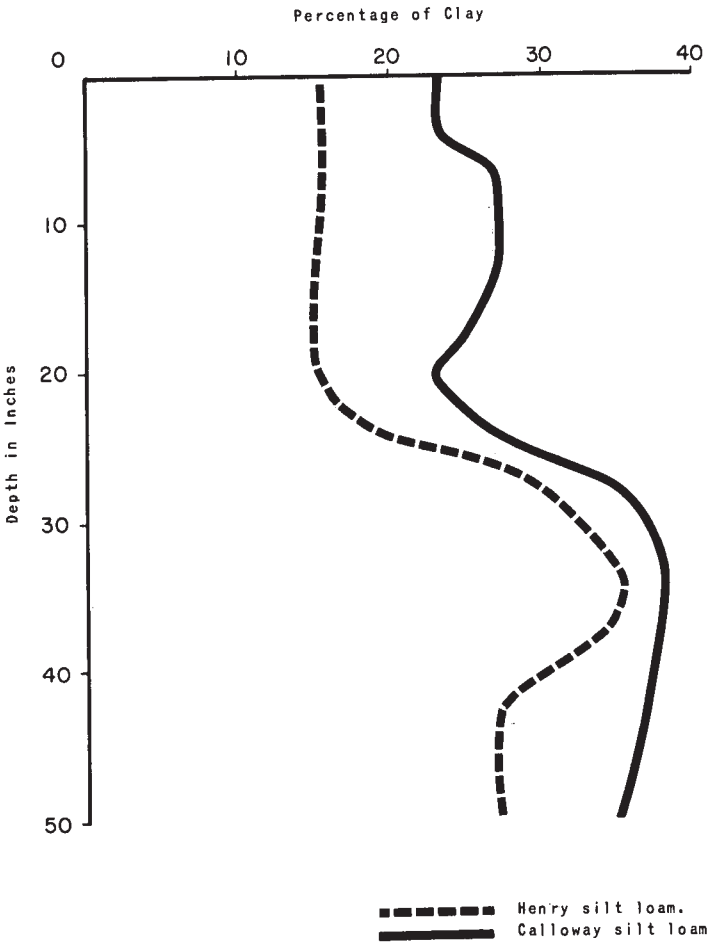

Figure 6.—**Distribution of clay in profiles of Henry silt loam and Calloway silt loam. Both soils formed in loess and are about the same age.**

Accumulation of organic matter in the uppermost part of the profile has been an important process in horizon development. The A1 horizon is darker colored because of the organic matter, and the A2 horizon is lighter colored because organic matter as well as clay minerals and iron oxide have been removed. The content of organic matter ranges from medium to low in the soils in Woodruff County.

Most of the soils of the county are moderately leached to strongly leached. Nearly all have been leached of carbonates, except for Foley, Grubbs, Hillemann, McCrory, and Lafe soils. Generally, the leaching of bases precedes the translocation of silicate clay minerals.

Reduction and transfer of iron are evident in all the somewhat poorly drained and poorly drained soils. These processes have been important in the formation of Henry, Calhoun, Zachary, Mhoon, Patterson, Tuckerman, Amagon, and Sharkey soils. Gray colors are evidence of the reduction of iron. Mottles of red, brown, and yellow in some horizons and iron concretions in others indicate the segregation of iron. The iron concretions are made up of segregated iron compounds in complex with organic matter and manganese or other oxides.

Translocation, or downward movement, of clay minerals has contributed to horizon development in most of the soils. The eluviated A2 horizon contains less clay and generally is lighter colored than the B horizon. Generally, clay has accumulated in the B horizon in the form of clay films in pores and on ped surfaces. The C horizon contains less clay than the B horizon.

The distribution of clay in the profiles of Henry and Calloway soils, which are about the same age, is shown in figure 6. The shape of the curves suggests that translocation of clay is more advanced in Henry soils than in Calloway soils. Both soils formed in loess, but they occur in different topographic positions. Henry soils are in low-lying areas and depressions where runoff is slow and a large amount of water percolating through the soil carries much of the clay downward and deposits it in the lower horizons. Calloway soils are in higher, though intermediate, areas where less water percolates through the soils and less clay is carried downward.

The distribution of clay in the profiles of Beulah fine sandy loam, Bosket fine sandy loam, and Dubbs silt loam is shown in figure 7, and that in the profiles of Robinsonville fine sandy loam, Commerce fine sandy loam, and Bowdre silty clay loam is shown in figure 8.

All of these soils formed in stratified sediments, and in all of them the stratification of raw sediments rather than translocation of clay minerals dominates horizon differentiation. In the Beulah, Bosket, and Dubbs soils there is some evidence of translocation of clay in the form of thin, patchy clay films on peds and in pores and as bridging between sand grains, but in the younger Robinsonville, Commerce, and Bowdre soils, there is no visible evidence. In the lower horizons, however, the curves for Robinsonville and Bowdre soils (fig. 8) are the same shape as those for Dubbs and Bosket (fig. 7). The percentages of sand, silt, and clay and their distribution in a profile of Commerce soil is shown in figure 9.

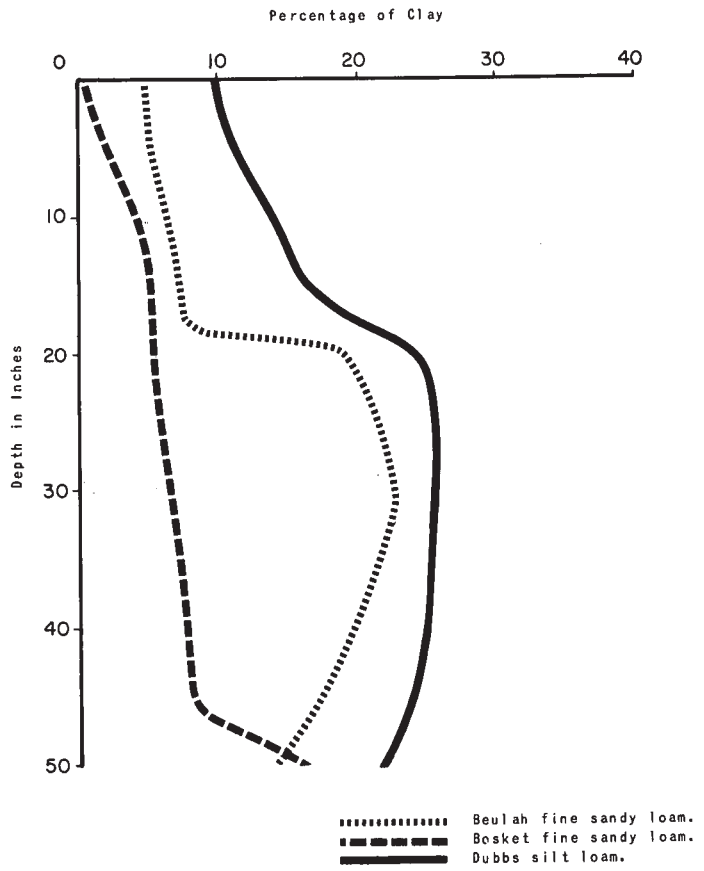

Figure 7.—**Distribution of clay in profiles of Beulah fine sandy loam, Bosket fine sandy loam, and Dubbs silt loam. All of these soils formed in old stratified alluvium. Most of the Beulah soil in this county is fine sandy loam.**

Classification of the Soils

Soils are classified so that we can more easily remember their significant characteristics, assemble knowledge about them, see their relationships to one another, and understand their behavior and their response to the whole environment. Through classification and the use of soil maps, we can apply our knowledge of soils to specific fields and other tracts of land.

Two systems of classifying soils above the series level have been used in the United States in recent years. The older system was adopted in 1938 (*2*) and revised later (*10*). The system currently used by the National Cooperative Soil Survey was adopted in 1965 and is under continual study. Readers interested in the development of the system should refer to the latest literature available (*9*, *16*).

The current system consists of six categories. Beginning with the most inclusive, these categories are the order, the suborder, the great group, the subgroup, the family, and the series. The criteria for classification are soil properties that are measurable or observable, but the properties are selected so that soils of similar genesis are grouped together. Placement of some series in the current system of classification, particularly in families, may change as more precise information becomes available.

Table 11 shows the classification of the soil series of Woodruff County according to both systems. The categories of the current system are defined briefly in the following paragraphs.

ORDER.—Soils are grouped into orders according to properties that seem to have resulted from the same processes acting to about the same degree on the parent material. Ten soil orders are recognized in the current system: Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols, Alfisols, Ultisols, Oxisols, and Histosols. Of these, the Entisols, Inceptisols, Mollisols, and Alfisols are represented in Woodruff County.

Entisols are recent soils in which there has been little, if any, horizon development.

Inceptisols occur mostly on young, but not recent, land surfaces.

Mollisols have a thick dark-colored surface layer, moderate to strong structure, and base saturation of more than 50 percent.

Alfisols contain accumulated aluminum and iron, have argillic or natric horizons, and have a base saturation of more than 35 percent.

SUBORDER.—Each order is divided into suborders, primarily on the basis of soil characteristics that indicate genetic similarity. The suborders have a narrower climatic range than the order. The criteria for suborders reflect either the presence or absence of waterlogging or soil differences resulting from climate or vegetation.

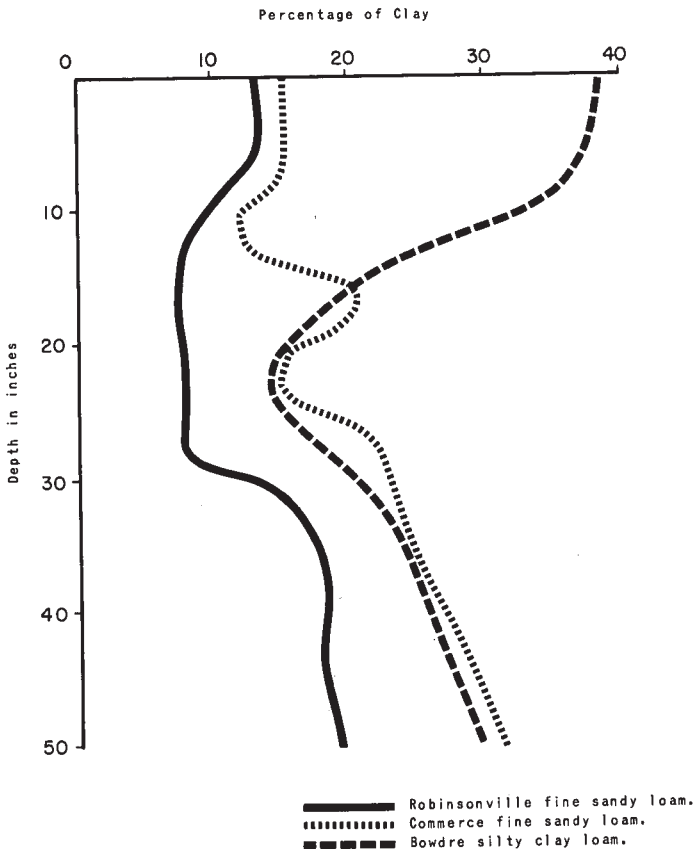

Figure 8.—**Distribution of clay in profiles of Robinsonville fine sandy loam, Commerce fine sandy loam, and Bowdre silty clay loam. All of these soils formed in young stratified alluvium.**

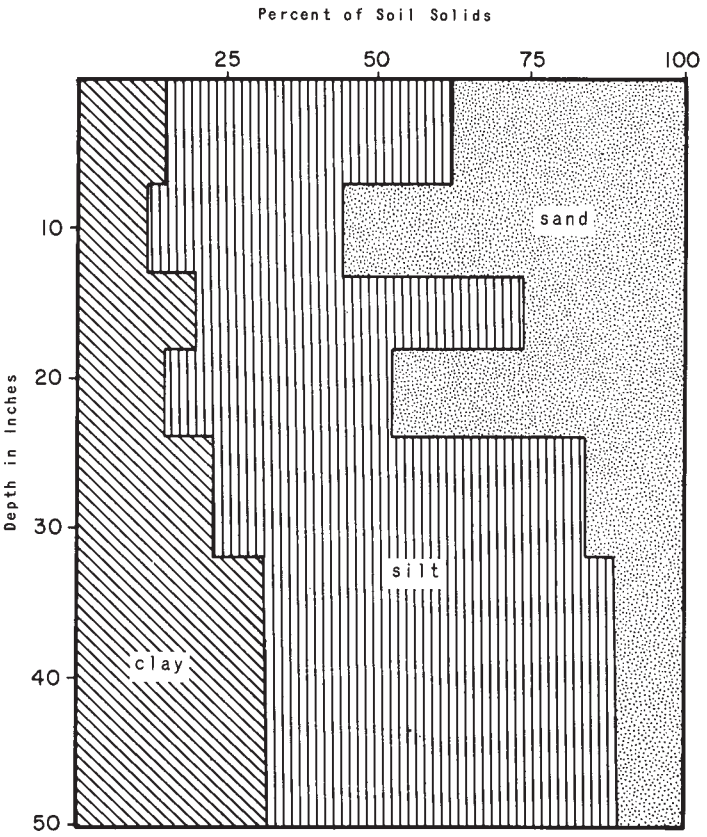

Figure 9.—**Distribution of sand, silt, and clay in a profile of Commerce soil, which formed in young stratified alluvium.**

GREAT GROUP.—Each suborder is divided into great groups, on the basis of uniformity in kind and sequence of genetic horizons.

SUBGROUP.—Each great group is divided into subgroups, one representing the central (typic) concept of the group, and other subgroups, called intergrades, made up of soils that have mostly the properties of one great group but also one or more properties of another great group.

FAMILIES.—Families are established within subgroups, primarily on the basis of properties important to plant growth. Some of these properties are texture, mineralogy, reaction, soil temperature, permeability, consistence, and thickness of horizons.

General Nature of the County

The early economy of Woodruff County was based on the plantation system. Cotton and rice were the main cash crops. The county is still mainly agricultural. According to the 1959 Census of Agriculture, about 70 percent of the county is in farms. The rest is mainly in large tracts of woodland, but more woodland is rapidly being cleared.

The number of farms in 1959 was 1,063. The average size was 251 acres, and 71 farms were more than 500 acres in size. Of the farm operators, 227 were full owners, 178 were part owners, 5 were managers, and 653 were tenants. Most farms are small enough that the family, with only occasional outside help, can do most of the work. The larger farms are operated by tenants or day laborers under the supervision of the owner or manager. Some tenants pay a fixed cash rent, and some a percentage of the crop.

Most of the farms are general farms. Cotton, soybeans, and rice are the main crops. Fairly large herds are kept on some farms. Small acreages are used to grow strawberries, watermelons, small grain, corn, and orchard crops. According to the U.S. Census of Agriculture, the acreage of principal crops and pasture in 1959 was as follows:

Crops	*Acres in 1959*
Soybeans	74,968
Cotton	36,294
Rice	16,319
Corn	4,732
Wheat	1,518
Hay	2,656
Pasture	12,272
Wooded pasture	13,975

The number of cattle and calves in the county in 1959 was 6,999, and the number of hogs and pigs was 3,933.

Among the industrial enterprises related to agriculture are cotton ginning, grain storage, lumber milling, well drilling, barge shipping, and crop dusting.

Physiography, Relief, and Drainage

The three physiographic areas in Woodruff County are the flood plains of the White River and its tributaries, the Cache River and Bayou DeView; the loessal plains east of Bayou DeView; and the loessal ridge between the Cache River and Bayou DeView in the southern part of the county. The flood plains consist of wide flats and gently undulating areas of ridges and swales broken by oxbow lakes. The loessal plains are made up of wide flats and gently sloping ridges. The bottom lands are separated from the loessal plains by a steep escarpment that is between 10 and 20 feet high in most places.

The slope ranges from less than 1 percent on the flood plains to as much as 8 percent on the loessal plains. The elevation ranges from 165 to 225 feet on the flood plains, from 190 to 225 feet on the loessal plains, and from 200 to 225 feet on the ridges.

The three major streams that drain most of Woodruff County are the White River and its tributaries, the Cache River, and Bayou DeView. The White River drains the western part of the county, the Cache River the central part, and Bayou DeView the eastern part. Among the minor streams also draining the eastern part of the county are Caney Creek, Second Creek, and East Flat Fork Creek.

Climate [6]

Woodruff County has hot humid summers and mild winters. Table 12 shows data on temperature and precipitation from the U.S. Weather Bureau Stations at Brinkley in Monroe County and Augusta in Woodruff County. The data are representative of Woodruff County.

Summers are characterized by bright sunny hot weather broken by thunderstorms and followed by cooler and cloudy or rainy weather. In winter, cool cloudy or rainy

[6] R. O. REINHOLD, meteorologist, U.S. Weather Bureau Station, Little Rock, Ark., helped prepare this section.

TABLE 11.—*Soil series in Woodruff County classified into higher categories*

Series	Current classification			Great soil group, 1938 classification
	Family	Subgroup	Order	
Alligator	Fine, montmorillonitic, acid, thermic	Vertic Haplaquepts	Inceptisols	Grumusols.
Amagon	Fine-silty, mixed, thermic	Typic Ochraqualfs	Alfisols	Low-Humic Gley soils.
Beulah	Coarse-loamy, mixed, thermic	Fluventic Dystrochrepts	Inceptisols	Alluvial soils.
Bosket	Fine-loamy, mixed, thermic	Mollic Hapludalfs	Alfisols	Gray-Brown Podzolic soils.
Bowdre	Clayey over loamy, mixed, thermic	Aquic Fluventic Hapludolls	Mollisols	Alluvial soils.
Bruno	Sandy, mixed, thermic	Typic Udifluvents	Entisols	Regosols.
Calhoun	Fine-silty, mixed, thermic	Typic Glossaqualfs	Alfisols	Planosols.
Calloway	Fine-silty, mixed, thermic	Aqueptic Fragiudalfs	Alfisols	Planosols.
Commerce	Fine-silty, mixed, nonacid, thermic	Aeric Fluventic Haplaquepts	Inceptisols	Alluvial soils.
Crowley	Fine, montmorillonitic, thermic	Typic Albaqualfs	Alfisols	Planosols.
Dubbs	Fine-silty, mixed, thermic	Typic Hapludalfs	Alfisols	Gray-Brown Podzolic soils.
Dundee	Fine-silty, mixed, thermic	Aeric Ochraqualfs	Alfisols	Gray-Brown Podzolic soils.
Foley	Fine-silty, mixed, thermic	Albic Glossic Natraqualfs	Alfisols	Solodized-Solonetz soils.
Forestdale	Fine, montmorillonitic, thermic	Typic Ochraqualfs	Alfisols	Low-Humic Gley soils.
Grenada	Fine-silty, mixed, thermic	Ochreptic Fragiudalfs	Alfisols	Gray-Brown Podzolic soils.
Grubbs	Fine, mixed, thermic	Vertic Natrudalfs	Alfisols	Planosols.
Henry	Coarse-silty, mixed, thermic	Typic Fragiaqualfs	Alfisols	Planosols.
Hillemann	Fine-silty, mixed, thermic	Aeric Ochraqualfs	Alfisols	Planosols.
Lafe	Fine-silty, mixed, thermic	Glossic Natraqualfs	Alfisols	Solodized-Solonetz soils.
McCrory	Fine-loamy, mixed, thermic	Albic Glossic Natraqualfs	Alfisols	Solodized-Solonetz soils.
Mhoon	Fine-silty, mixed, nonacid, thermic	Fluventic Haplaquepts	Inceptisols	Alluvial soils.
Patterson	Coarse-loamy, mixed, thermic	Aeric Ochraqualfs	Alfisols	Low-Humic Gley soils.
Robinsonville	Coarse-loamy, mixed, nonacid, thermic.	Typic Udifluvents	Entisols	Alluvial soils.
Sharkey	Very fine, montmorillonitic, nonacid, thermic.	Vertic Haplaquepts	Inceptisols	Grumusols.
Tuckerman	Fine-loamy, mixed, thermic	Typic Ochraqualfs	Alfisols	Low-Humic Gley soils.
Zachary	Fine-silty, mixed, thermic	Typic Albaqualfs	Alfisols	Low-Humic Gley soils.

TABLE 12.—*Temperature and precipitation data*

[Temperature data from Brinkley, Monroe County, elevation 205 feet, for the period 1931 through 1960; precipitation data from Augusta' Woodruff County, elevation 218 feet, for the period 1944 through 1963]

Month	Temperature				Precipitation		
	Average daily maximum	Average daily minimum	Two years in 10 will have at least 4 days with—		Average total	One year in 10 will have—	
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—
	°F.	°F.	°F.	°F.	In.	In.	In.
January	53	32	74	10	4. 62	1. 36	8. 92
February	56	35	76	14	5. 04	1. 07	9. 73
March	64	41	82	22	5. 48	2. 16	8. 47
April	74	50	87	33	4. 51	1. 34	6. 76
May	82	58	93	43	5. 23	1. 73	9. 04
June	90	66	101	53	4. 06	1. 02	9. 63
July	93	70	103	58	3. 11	0. 87	5. 45
August	93	69	105	55	3. 51	0. 74	7. 65
September	88	60	101	42	3. 11	0. 50	8. 01
October	78	49	91	30	3. 14	0. 84	8. 91
November	64	38	82	19	4. 89	1. 35	9. 29
December	54	33	74	14	4. 17	1. 63	6. 67
Year					50. 87	39. 83	71. 21

weather alternates with clear cold weather. Snowfall is negligible, periods of intense cold are of short duration, and sleet occurs only occasionally.

Temperature data from the U.S. Weather Bureau Station at Brinkley in Monroe County show that the average growing season is 208 days. The average date of the last freezing temperature (32°F.) in spring is March 31, and the average date of the first in fall is October 25. The latest that a temperature of 32° has been recorded is April 22 (in 1933), and the earliest is September 28 (in 1937 and 1938). The average date of the last 28° reading in spring is March 11, and that of the first in fall is November 6. The latest that a temperature of 28° has been recorded is April 15 (in 1943), the earliest is October 7 (in 1952).

Precipitation is generally adequate for the needs of a farming area. It averages about 51 inches a year, of which only about 1 percent is snow. It is rather uniformly distributed throughout the year; roughly, 60 percent falls in winter and spring, and heavy rain is most likely in spring. Summer rainfall associated with thunderheads is erratic and unpredictable.

Short periods of drought affecting small parts of this county are frequent, and late-summer droughts of a month or more have occurred. In some years droughts severe enough to injure seedlings and shallow-rooted crops occur in April, May, and June. In most years at least one drought lasting 15 days or more occurs in the period June through September. Such droughts damage but do not kill crops. Severe droughts, though infrequent, have occurred during the period of record. Droughts in 1930 and 1954 caused severe and widespread damage.

During the hottest part of the summer, evaporation of moisture from the soil averages a third of an inch a day. Drought days (days on which well-drained soils have little or no available moisture in the uppermost 12 inches) are most common in August, September, and October. Some can be expected in July.

In spring, wetness is common. In most years it does not interfere seriously with spring planting, but planting in low-lying areas may have to be delayed from one week to several weeks in a wet season. Late frost may damage such crops as cotton, strawberries, peaches, and pecans, and cotton may have to be replanted. The normally dry weather late in summer and in fall is favorable for harvesting, but not for fall seeding and for the growth of pasture plants. Early frost may damage the quality or reduce the yield of rice, cotton, and late-planted soybeans. Fall-sown small grains remain vigorous enough for grazing throughout the winter.

Water

The supply of surface water in Woodruff County is good, even though some of the streams are dry part of the year. Among the principal streams and bayous are the White River, the Cache River, Bayou DeView, and Cache Bayou. Among the main lakes are White Lake, Horse Shoe Lake, Yancopin Lake, and Seven Mile Lake. There are many other lakes, and many of the lakes are oxbows of the White River.

The supply of ground water is abundant. Wells 6 to 12 inches in diameter that have been drilled to a depth of 110 feet furnish 1,000 to 2,500 gallons of water a minute. The water is generally of good quality and is used for irrigation. In addition to the wells, reservoirs 20 to 640 acres in area have been built for irrigation and fish farming.

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Glossary

Acidity. See Reaction, soil.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity. The capacity of a soil to hold water in a form available to plants. Amount of moisture held in soil between field capacity, or about one-third atmosphere of tension, and the wilting coefficient, or about 15 atmospheres of tension.

Base saturation. The degree to which material that has base-exchange properties is saturated with exchangeable cations other than hydrogen, expressed as a percentage of the cation-exchange capacity.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Claypan. A compact, slowly permeable soil horizon that contains more clay than the horizons above and below it. A claypan is commonly hard when dry and plastic or stiff when wet.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors, consisting of concentrations of compounds or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent; will not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Erosion. The wearing away of the land surface by wind, running water, and other geological agents.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic matter and clay but is rich in silt or very fine sand. The layer is seemingly cemented when dry, has a hard or very hard consistence, and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Gleyed soil. A soil in which waterlogging and lack of oxygen have caused the material in one or more horizons to be neutral gray in color. The term "gleyed" is applied to soil horizons with yellow and gray mottling caused by intermittent waterlogging.

Green-manure crop. A crop grown for the purpose of being turned under in an early stage of maturity or soon after maturity for soil improvement.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes.

Internal soil drainage. The downward movement of water through the soil profile. The rate of movement is determined by the texture, structure, and other characteristics of the soil profile and underlying layers, and by height of the water table, either permanent or perched. Relative terms for expressing internal drainage are *none, very slow, slow, medium, rapid,* and *very rapid.*

Loess. A fine-grained eolian deposit consisting dominantly of silt-sized particles.

Mapping unit. Areas of soil of the same kind outlined on the soil map and identified by a symbol.

Morphology, soil. The makeup of the soil, including the texture, structure, consistence, color, and other physical, mineralogical, and biological properties of the various horizons of the soil profile.

Mottled. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. Descriptive terms are as follows: Abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are these: *fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse,* more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Natric horizon. A special kind of argillic horizon that has prismatic or, more commonly, columnar structure and more than 15 percent saturation with sodium in some part.

Natural drainage. Drainage that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time. If podzolic, they commonly have mottling below 6 to 16 inches in the lower A horizon and in the B and C horizons.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Nutrient, plant. Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil, and carbon, hydrogen, and oxygen obtained largely from the air and water, are plant nutrients.

Parent material (soil). The horizon of weathered rock or partly weathered soil material from which soil has formed; horizon C in the soil profile.

Ped. An individual natural soil aggregate, such as a crumb, a prism, or a block, in contrast to a clod.

Permeability. The quality that enables a soil horizon to transmit water or air. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

Phase, soil. A subdivision of a soil type, series, or other unit in the soil classification system, made because of differences that affect management but do not affect classification. A soil type, for example, may be divided into phases because of differences in slope, stoniness, thickness, or some other characteristic that affects management.

Plowsole. A compacted layer formed in the soil immediately below the plowed layer.

Poorly graded. A soil material, consisting mainly of particles nearly the same size. Because there is little difference in the size of the particles, the density of a poorly graded soil can be increased only slightly by compaction.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material. See Horizon, soil.

Reaction, soil. The degree of acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is precisely

neutral in reaction, because it is neither acid nor alkaline. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	Below 4.5	Mildly alkaline	7.4 to 7.8
Very strongly acid	4.5 to 5.0	Moderately alkaline	7.9 to 8.4
Strongly acid	5.1 to 5.5	Strongly alkaline	8.5 to 9.0
Medium acid	5.6 to 6.0	Very strongly alkaline	9.1 and higher
Slightly acid	6.1 to 6.5		
Neutral	6.6 to 7.3		

Relief. The elevations or inequalities of a land surface, considered collectively.

Runoff. The part of the precipitation upon a drainage area that is discharged from the area in stream channels. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz, but sand may be of any mineral composition. As a textural class, soil that is 85 percent or more sand and not more than 10 percent clay.

Series, soil. A group of soils developed from a particular type of parent material and having genetic horizons that, except for texture of the surface layer, are similar in differentiating characteristics and in arrangement in the profile.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effect of climate and living matter acting upon parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in a mature soil includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are (1) *single grain* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the profile below plow depth.

Substratum. Any layer beneath the solum, or true soil.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, usually about 5 to 8 inches in thickness.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportions of fine particles are: *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Type, soil. A subdivision of the soil series that is made on the basis of differences in the texture of the surface layer.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

Well graded. A soil material consisting of particles that are well distributed over a wide range in size or diameter. The density and bearing properties of a well-graded soil can be easily increased by compaction. Contrasts with poorly graded.

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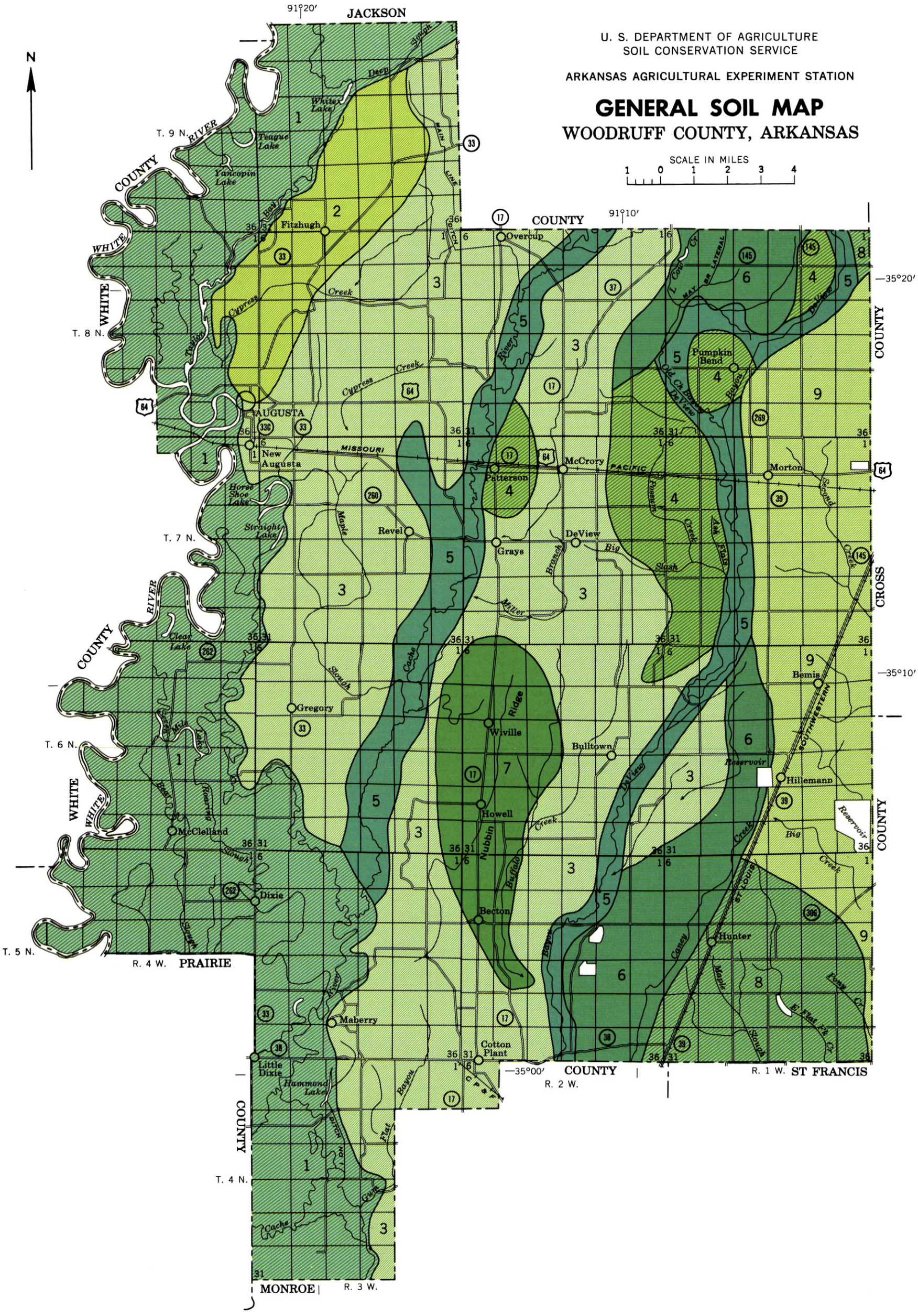
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

ARKANSAS AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

WOODRUFF COUNTY, ARKANSAS

SCALE IN MILES
1 0 1 2 3 4



SOIL ASSOCIATIONS

1 — Sharkey-Bowdre association: Poorly drained to moderately well drained, level to gently undulating, clayey and loamy soils in slack-water areas

2 — Bosket-Beulah-Bruno association: Well-drained to excessively drained, level to undulating, loamy and sandy soils on natural levees

3 — Bosket-Dundee-Dubbs association: Well-drained to somewhat poorly drained, level to undulating, loamy soils on natural levees

4 — Dundee-Amagon-Foley association: Somewhat poorly drained to poorly drained, level to nearly level, loamy soils on bottom lands

5 — Amagon-Foley association: Poorly drained to somewhat poorly drained, level, loamy soils in depressions and old filled stream channels

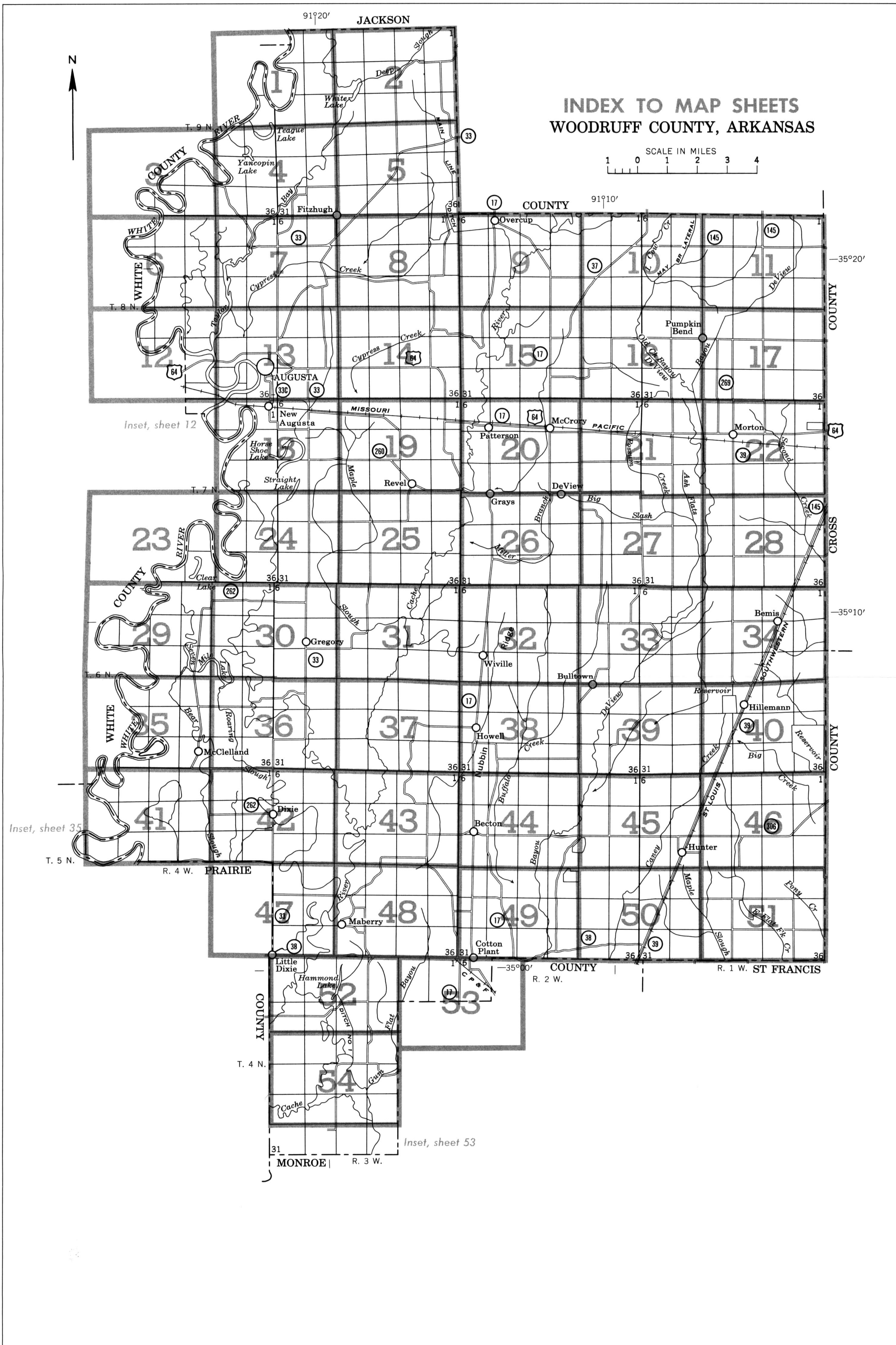
6 — Alligator association: Poorly drained, level to nearly level, clayey soils in slack-water areas

7 — Calloway-Calhoun-Grenada association: Poorly drained to moderately well drained, level to sloping soils that formed in windblown silts on flats and low ridges

8 — Crowley-Hillemann association: Poorly drained to somewhat poorly drained, level to nearly level soils that formed in windblown silts on flats and low ridges

9 — Calhoun-Calloway-Henry association: Poorly drained to somewhat poorly drained, level to nearly level soils that formed in windblown silts on broad flats

October 1967


INDEX TO MAP SHEETS
WOODRUFF COUNTY, ARKANSAS
SCALE IN MILES
1 0 1 2 3 4
N
JACKSON
COUNTY
WHITE COUNTY
WHITE COUNTY
CROSS COUNTY
PRAIRIE COUNTY
MONROE
ST FRANCIS
91°20′
91°10′
35°20′
35°10′
35°00′
T. 9 N.
T. 8 N.
T. 7 N.
T. 6 N.
T. 5 N.
T. 4 N.
R. 4 W.
R. 3 W.
R. 2 W.
R. 1 W.
Inset, sheet 12
Inset, sheet 35
Inset, sheet 53
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54
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Gregory
Wiville
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Bemis
Hillemann
Howell
McClelland
Dixie
Becton
Hunter
Maberry
Cotton Plant
Little Dixie
White Lake
Teague Lake
Yancopin Lake
Horse Shoe Lake
Straight Lake
Clear Lake
Hammond Lake
Reservoir
MISSOURI PACIFIC
ST LOUIS SOUTHWESTERN
MAIN LINE DITCH
MAY BR LATERAL
DITCH NO 1
C P & F
Deep Slough
Cypress Creek
Taylor Bay
Bay
Maple Slough
Cache River
Miller Creek
Big Slash
Ash Flats
Possum Creek
Old Channel Bayou DeView
DeView
Second Creek
Nubbin Ridge
Buffalo Creek
Seven Mile Lake
Bear Slough
Roaring Slough
Big Creek
Caney Creek
Maple Slough
Pony Cr
E Flag Fk Cr
Flat Bayou
Gum
Cache
Branch
L Cow Cr
River
Creek
Bayou
33 33C 17 37 145 64 269 260 39 262 306 38

SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, A, B, or C, shows a class of slope, and U shows a gently undulating soil. Symbols without a slope letter are those of nearly level soils. A final number, 2, in the symbol, shows that the soil is eroded.

SYMBOL	NAME
AaA	Alligator silt loam, 0 to 1 percent slopes
AaB	Alligator silt loam, 1 to 3 percent slopes
AcA	Alligator silty clay loam, 0 to 1 percent slopes
Am	Amagon silt loam
Ar	Amagon–Grubbs silt loams
BbU	Beulah and Bruno sandy loams, gently undulating
BbC	Beulah and Bruno sandy loams, undulating
BkA	Bosket fine sandy loam, 0 to 1 percent slopes
BkC	Bosket fine sandy loam, 3 to 8 percent slopes
BkU	Bosket fine sandy loam, gently undulating
BoA	Bowdre silty clay loam, 0 to 1 percent slopes
BoU	Bowdre silty clay loam, gently undulating
BrU	Bruno loamy fine sand, gently undulating
BrC	Bruno loamy fine sand, undulating
Ca	Calhoun silt loam
ClA	Calloway silt loam, 0 to 1 percent slopes
ClB	Calloway silt loam, 1 to 3 percent slopes
CmU	Commerce fine sandy loam, gently undulating
CoU	Commerce silt loam, gently undulating
CrA	Crowley and Hillemann silt loams, 0 to 1 percent slopes
CrB	Crowley and Hillemann silt loams, 1 to 3 percent slopes
DbA	Dubbs fine sandy loam, 0 to 1 percent slopes
DbU	Dubbs fine sandy loam, gently undulating
DsA	Dubbs silt loam, 0 to 1 percent slopes
DsB	Dubbs silt loam, 1 to 3 percent slopes
DuA	Dundee fine sandy loam, 0 to 1 percent slopes
DuB	Dundee fine sandy loam, 1 to 3 percent slopes
DuU	Dundee fine sandy loam, gently undulating
DvA	Dundee silt loam, 0 to 1 percent slopes
DvU	Dundee silt loam, gently undulating
Fo	Forestdale silty clay loam
GaB	Grenada silt loam, 1 to 3 percent slopes
GaC	Grenada silt loam, 3 to 8 percent slopes
GaC2	Grenada silt loam, 3 to 8 percent slopes, eroded
GbA	Grubbs silt loam, 0 to 1 percent slopes
GbB	Grubbs silt loam, 1 to 3 percent slopes
Gf	Grubbs–Foley complex
He	Henry silt loam
Lf	Lafe–Foley silt loams
Mc	McCrory complex
Mh	Mhoon fine sandy loam
Mn	Mhoon sandy clay loam
PaA	Patterson loamy fine sand, 0 to 1 percent slopes
PaU	Patterson loamy fine sand, gently undulating
Ro	Robinsonville fine sandy loam
ShA	Sharkey clay, 0 to 1 percent slopes
ShU	Sharkey clay, gently undulating
SkA	Sharkey silty clay loam, 0 to 1 percent slopes
SkU	Sharkey silty clay loam, gently undulating
Sm	Sharkey and Mhoon soils
Tu	Tuckerman fine sandy loam
Za	Zachary silt loam
Zc	Zachary silty clay loam

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads

- Dual
- Good motor
- Poor motor
- Trail

Highway markers

- National Interstate
- U. S.
- State or county

Railroads

- Single track
- Multiple track
- Abandoned

Bridges and crossings

- Road
- Trail, foot
- Railroad
- Ferry (FY)
- Ford (FORD)
- Grade
- R. R. over
- R. R. under
- Tunnel

Buildings

- School
- Church
- Station

Mines and Quarries

- Mine dump
- Pits, gravel or other

Power line

Pipeline

Cemetery

Dams

Levee

Levee, abandoned

Well, oil or gas

BOUNDARIES

- National or state
- County
- Reservation
- Land grant
- Small park, cemetery, airport
- Land survey division corners

DRAINAGE

Streams, double-line

- Perennial
- Intermittent

Streams, single-line

- Perennial
- Intermittent
  - Crossable with tillage implements
  - Not crossable with tillage implements
- Unclassified

Canals and ditches (CANAL)

Lakes and ponds

- Perennial (water, w)
- Intermittent

Wells, water (flowing)

Spring

Marsh or swamp, outlined

Wet spot

Alluvial fan

Drainage end

RELIEF

Escarpments

- Bedrock
- Other

Prominent peak

Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stony, very stony
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gully

Soil map constructed 1967 by Cartographic Division, Soil Conservation Service, USDA, from 1962 aerial photographs. Controlled mosaic based on Arkansas plane coordinate system, north zone, Lambert conformal conic projection, 1927 North American datum.

GUIDE TO MAPPING UNITS

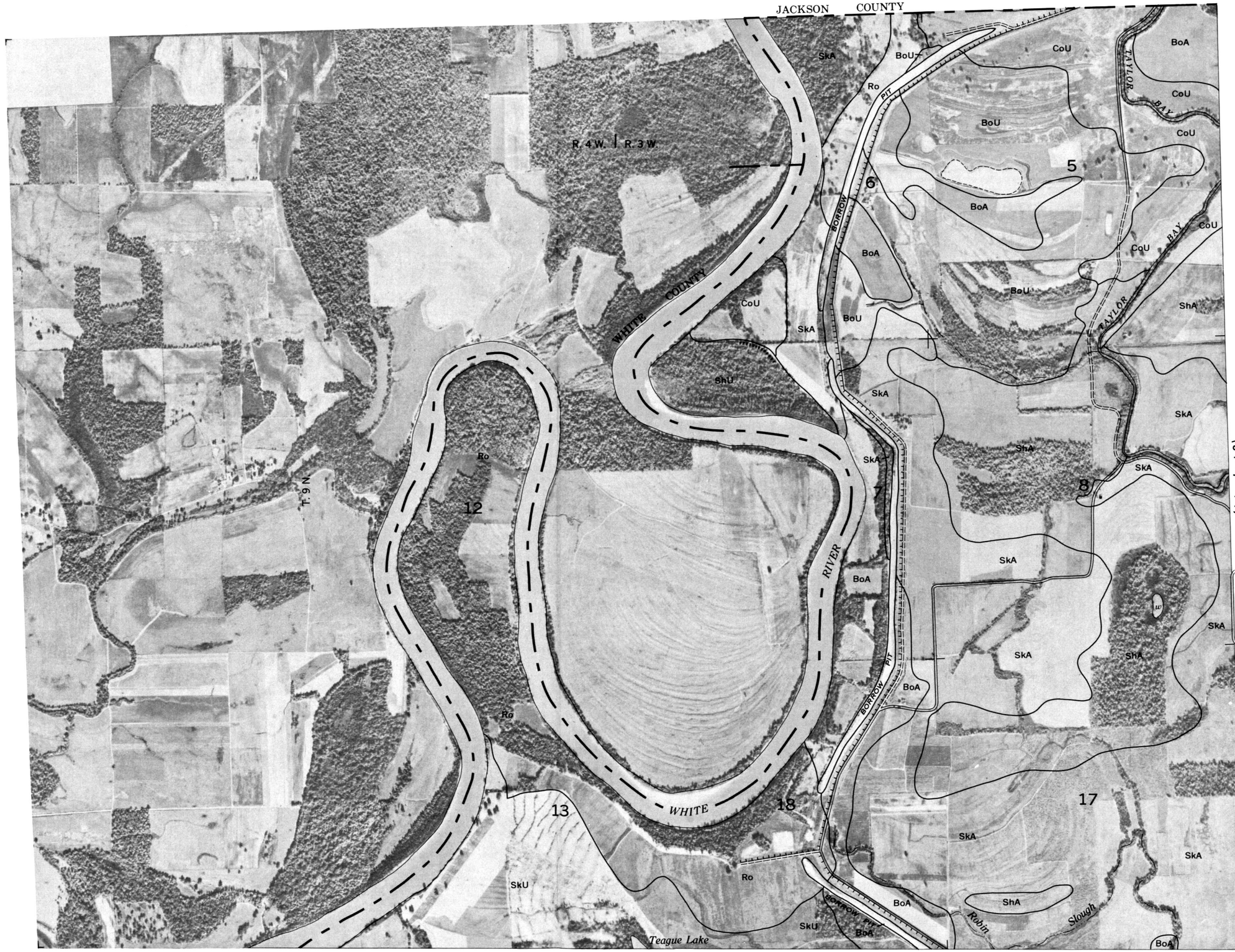
[For a full description of a mapping unit, read both the description of the mapping unit and the description of the soil series to which the mapping unit belongs.

[See table 1, page 5, for approximate acreage and proportionate extent of the soils and table 2, page 31, for predicted yields per acre of the principal crops. For woodland groups, see table 3, page 32. For facts about the engineering properties of the soils, turn to the section beginning on page 35, and for facts about other nonfarm uses of the soils, see the section beginning on page 48]

Map symbol	Mapping unit	Described on page	Capability unit		Woodland group	Wildlife group	
			Symbol	Page	Number	Number	Page
AaA	Alligator silt loam, 0 to 1 percent slopes	6	IIIw-1	28	4	4	35
AaB	Alligator silt loam, 1 to 3 percent slopes	6	IIIw-1	28	4	4	35
AcA	Alligator silty clay loam, 0 to 1 percent slopes	6	IIIw-1	28	4	4	35
Am	Amagon silt loam	7	IIIw-2	28	8	3	35
Ar	Amagon-Grubbs silt loams	7					
	Amagon	--	IIIw-2	28	8	3	35
	Grubbs	--	IIIw-2	28	11	3	35
BbU	Beulah and Bruno sandy loams, gently undulating	8					
	Beulah	--	IIe-1	26	6	1	34
	Bruno	--	IIIs-1	29	6	1	34
BbC	Beulah and Bruno sandy loams, undulating	8					
	Beulah	--	IIIe-1	28	6	1	34
	Bruno	--	IIIs-1	29	6	1	34
BkA	Bosket fine sandy loam, 0 to 1 percent slopes	8	I-1	26	1	1	34
BkC	Bosket fine sandy loam, 3 to 8 percent slopes	8	IIIe-1	28	3	1	34
BkU	Bosket fine sandy loam, gently undulating	9	IIe-1	26	1	1	34
BoA	Bowdre silty clay loam, 0 to 1 percent slopes	10	IIw-1	27	2	4	35
BoU	Bowdre silty clay loam, gently undulating	10	IIIw-3	29	2	4	35
BrU	Bruno loamy fine sand, gently undulating	10	IIIs-1	29	6	1	34
BrC	Bruno loamy fine sand, undulating	10	IIIs-1	29	6	1	34
Ca	Calhoun silt loam	11	IIIw-5	29	10	6	35
ClA	Calloway silt loam, 0 to 1 percent slopes	11	IIw-3	27	7	5	35
ClB	Calloway silt loam, 1 to 3 percent slopes	12	IIw-3	27	7	5	35
CmU	Commerce fine sandy loam, gently undulating	12	IIw-2	27	1	1	34
CoU	Commerce silt loam, gently undulating	12	IIw-2	27	1	1	34
CrA	Crowley and Hillemann silt loams, 0 to 1 percent slopes	13					
	Crowley	--	IIIw-5	29	11	6	35
	Hillemann	--	IIw-4	28	11	6	35
CrB	Crowley and Hillemann silt loams, 1 to 3 percent slopes	13					
	Crowley	--	IIIw-5	29	11	6	35
	Hillemann	--	IIw-4	28	11	6	35
DbA	Dubbs fine sandy loam, 0 to 1 percent slopes	14	I-1	26	1	1	34
DbU	Dubbs fine sandy loam, gently undulating	14	IIe-1	26	1	1	34
DsA	Dubbs silt loam, 0 to 1 percent slopes	14	I-1	26	1	1	34
DsB	Dubbs silt loam, 1 to 3 percent slopes	14	IIe-1	26	1	1	34
DuA	Dundee fine sandy loam, 0 to 1 percent slopes	15	I-1	26	3	1	34
DuB	Dundee fine sandy loam, 1 to 3 percent slopes	15	IIe-1	26	3	1	34
DuU	Dundee fine sandy loam, gently undulating	15	IIw-2	27	3	1	34
DvA	Dundee silt loam, 0 to 1 percent slopes	15	I-1	26	3	1	34
DvU	Dundee silt loam, gently undulating	15	IIw-2	27	3	1	34
Fo	Forestdale silty clay loam	16	IIIw-1	28	8	4	35
GaB	Grenada silt loam, 1 to 3 percent slopes	17	IIe-2	27	9	5	35
GaC	Grenada silt loam, 3 to 8 percent slopes	17	IIIe-2	28	9	5	35
GaC2	Grenada silt loam, 3 to 8 percent slopes, eroded	17	IIIe-2	28	9	5	35
GbA	Grubbs silt loam, 0 to 1 percent slopes	18	IIIw-4	29	11	2	35
GbB	Grubbs silt loam, 1 to 3 percent slopes	18	IIe-3	27	11	2	35
Gf	Grubbs-Foley complex	18	IIIw-4	29	11	2	35
He	Henry silt loam	19	IIIw-5	29	10	6	35
Lf	Lafe-Foley silt loams	20	VIs-1	29	12	7	35
Mc	McCrory complex	21	IIIw-2	28	11	2	35
Mh	Mhoon fine sandy loam	21	IIw-2	27	4	3	35
Mn	Mhoon sandy clay loam	22	IIIw-1	28	4	3	35
PaA	Patterson loamy fine sand, 0 to 1 percent slopes	22	IIIw-2	28	8	3	35
PaU	Patterson loamy fine sand, gently undulating	22	IIIw-2	28	8	3	35
Ro	Robinsonville fine sandy loam	23	I-1	26	1	1	34
ShA	Sharkey clay, 0 to 1 percent slopes	23	IIIw-1	28	5	4	35
ShU	Sharkey clay, gently undulating	24	IIIw-1	28	5	4	35
SkA	Sharkey silty clay loam, 0 to 1 percent slopes	24	IIIw-1	28	4	4	35
SkU	Sharkey silty clay loam, gently undulating	24	IIIw-1	28	4	4	35
Sm	Sharkey and Mhoon soils	24	Vw-1	29	4	4	35
Tu	Tuckerman fine sandy loam	24	IIIw-2	28	8	3	35
Za	Zachary silt loam	25	Vw-1	29	5	6	35
Zc	Zachary silty clay loam	25	Vw-1	29	5	6	35

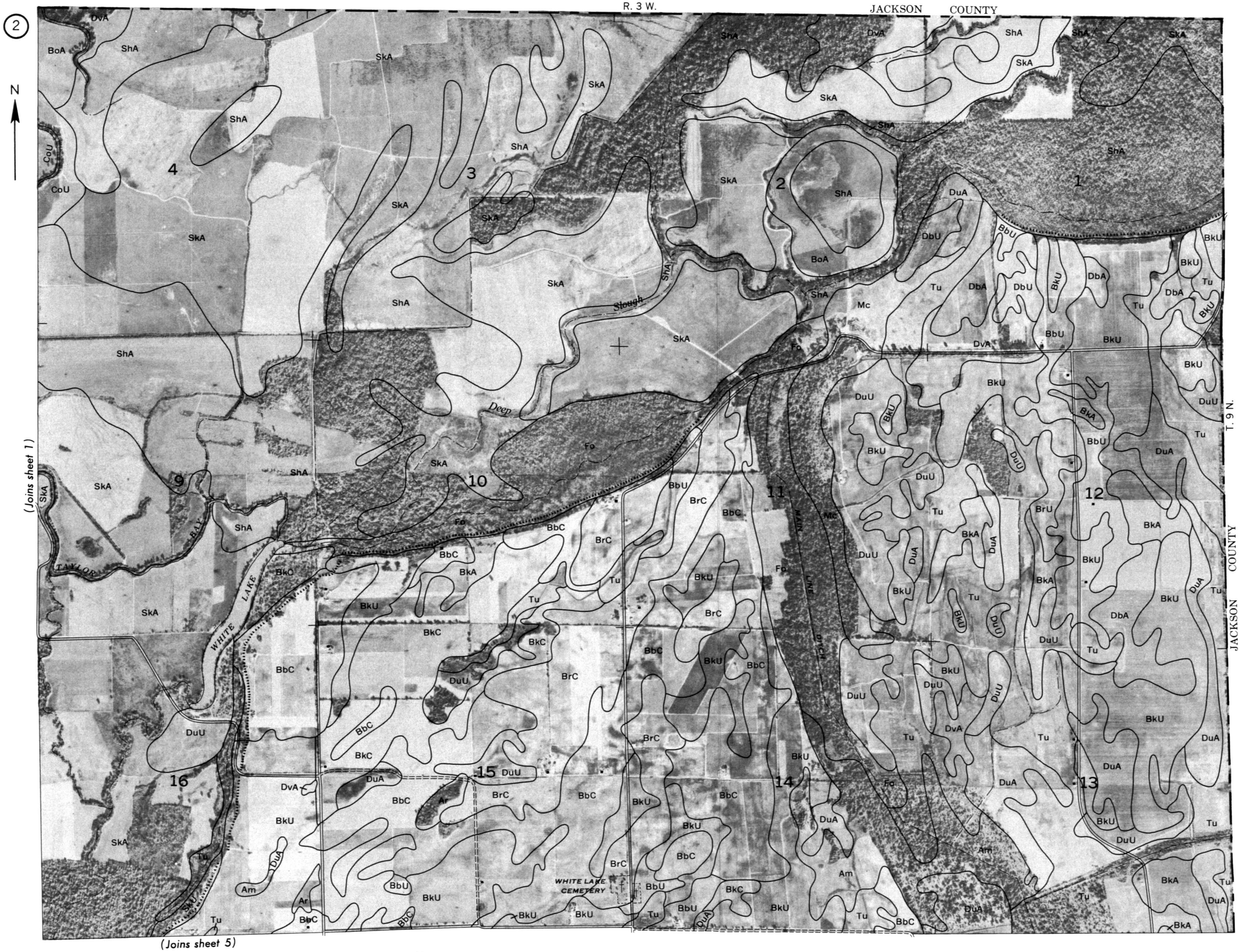
280-323 O - 68 (Facing soil maps)

WOODRUFF COUNTY, ARKANSAS — SHEET NUMBER 1



This map is one of a set compiled in 1967 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the Arkansas Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

WOODRUFF COUNTY, ARKANSAS NO. 1



0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

3

N

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO. 3

4

N

(Joins sheet 1)

R. 4 W. | R. 3 W.

T. 9 N.

(Joins sheet 3)

(Joins sheet 5)

(Joins sheet 7)

WHITE COUNTY RIVER

Teague Lake

Yancopin Lake

Mill Lake

BORROW PIT

BAYOU

23 24 19 20 26 25 30 29 35 36 31 32

SkU ShU Ro CmU CoU BkU BkC Ar BoA SkA ShA DuU DuA DvA BkA DsA Tu SkA Gf

Fitzhugh

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS — SHEET NUMBER 5

WOODRUFF COUNTY, ARKANSAS NO. 5

R. 3 W.

T. 9 N.

(Joins sheet 2)

(Joins sheet 4)

(Joins sheet 8)

5

N

JACKSON COUNTY

Woodruff Co School

MT OLIVE CEMETERY

MAIN LINE MISSOURI PACIFIC RAILROAD

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

6

N

R. 4 W.

(Joins sheet 3)

T. 8 N.

(Joins sheet 7)

(Joins sheet 12)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO.6

WOODRUFF COUNTY, ARKANSAS NO. 7

R. 4 W. | R. 3 W.

T. 8 N.

(Joins sheet 4)

(Joins sheet 6)

(Joins sheet 8)

(Joins sheet 13)

7

N

Little Jordan Lake

TAYLOR BAY

Cypress Creek

Fitzhugh

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet


8
N
(Joins sheet 5)
R. 3 W.
T. 8 N.
(Joins sheet 7)
(Joins sheet 9)
(Joins sheet 14)
Cypress
Creek
BLOCKADE
MANN-LIME PITCH
OVERCUP PITCH
HILL
1
2
3
4
9
10
11
12
13
14
15
16
33
0
½
1 Mile
Scale 1:20000
0
5000 Feet

WOODRUFF COUNTY, ARKANSAS NO. 9

JACKSON COUNTY

R. 2 W.

T. 8 N.

Overcup

Goodrich

Fakes Chapel

CACHE RIVER

(Joins sheet 8)

(Joins sheet 10)

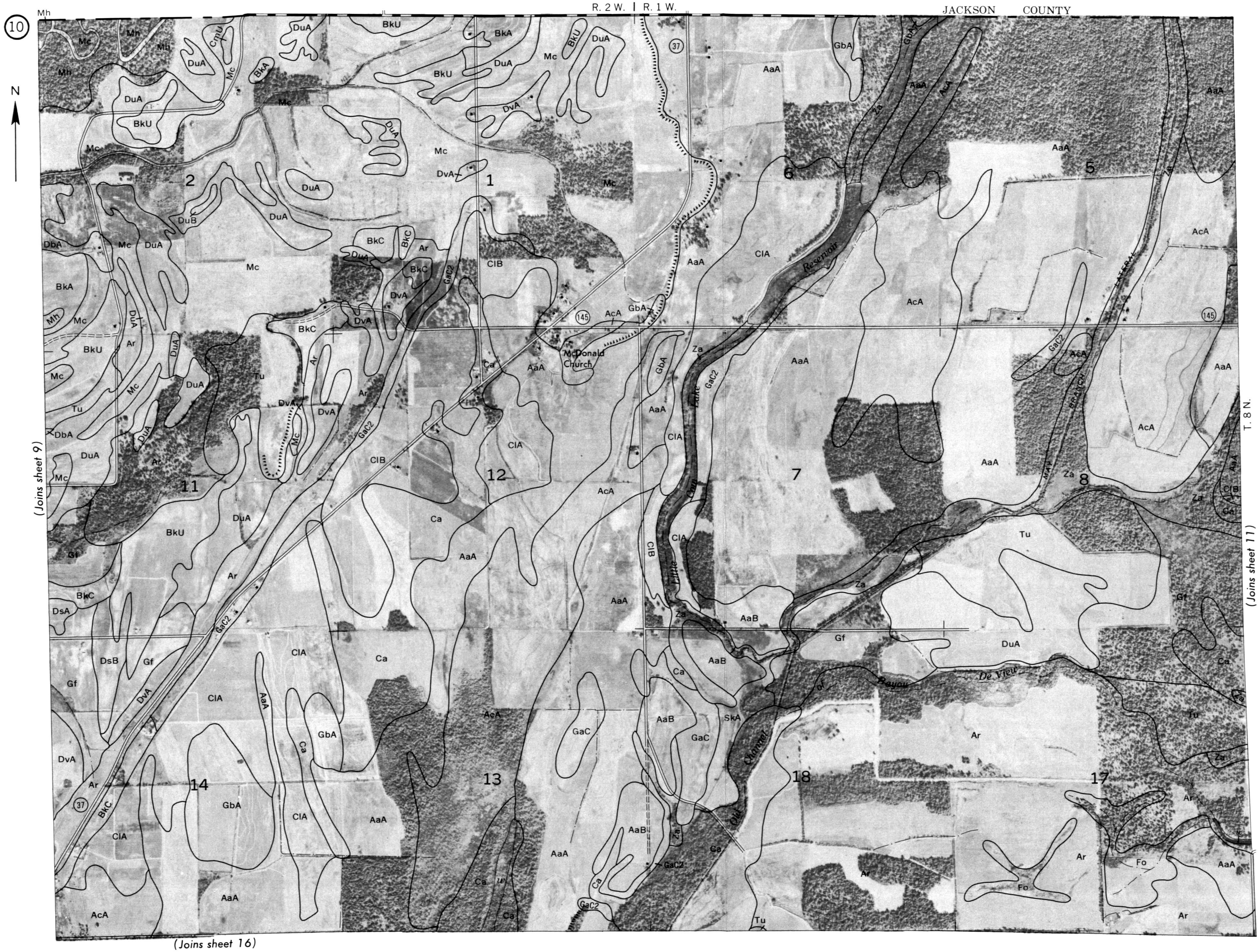
(Joins sheet 15)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

N



0 ½ 1 Mile Scale 1:20000 0 5000 Feet

R. 1 W.

JACKSON COUNTY

CROSS COUNTY

11

N

T. 8 N.

Sailor Harris Ridge

Mt Carmel Church

BAYOU DE VIEW

(Joins sheet 10)

(Joins sheet 17)

0 ½ 1 Mile

Scale 1:20000

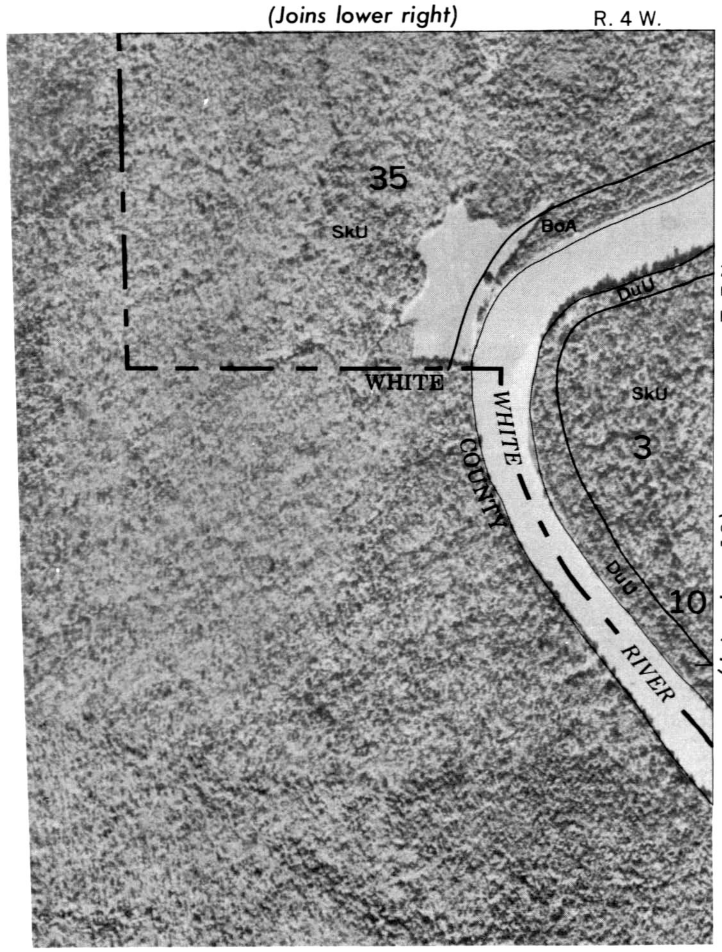
0 5000 Feet

WOODRUFF COUNTY, ARKANSAS — SHEET NUMBER 12

(12)

N

(Joins lower right) R. 4 W.



T. 7 N.

(Joins sheet 18)

R. 4 W. (Joins sheet 6)

T. 8 N.

(Joins sheet 13)

(Joins upper left)

0 ½ 1 Mile Scale 1:20000 0 5000 Feet

(Joins sheet 7)

13

R. 4 W. | R. 3 W.

T. 8 N.

N

BAY

TAYLOR

Cypress Creek

WHITE RIVER

AUGUSTA

QUIET CEMETERY

Creek

Bayou

(Joins sheet 12)

(Joins sheet 14)

(Joins sheet 18)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

0 ½ 1 Mile Scale 1:20000 0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO. 15

R. 2 W.

(Joins sheet 9)

15

N

T. 8 N.

(Joins sheet 14)

(Joins sheet 16)

(Joins sheet 20)

Riverside

19 20 21 22 27 28 29 30 31 32 33 34

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

16

(Joins sheet 10)

R. 2 W. | R. 1 W.

N

T. 8 N.

(Joins sheet 15)

(Joins sheet 17)

(Joins sheet 21)

23 24 19 20 26 25 30 29 35 36 31 32

Pumpkin Bend

Old Channel

Bayou De View

BAYOU DE VIEW

AcA AaA AaB Ca Tu Ar DuA DuU BkU DvA Gf BkA DsA DsB Fa Mc DbA Am BkC CtA GaC2

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO.16

R. 1 W.

(Joins sheet 11)

17

N

T. 8 N.

(Joins sheet 16)

Pumpkin Bend

PUMPKIN BEND CEMETERY

DE VIEW BAYOU

CROSS COUNTY

(Joins sheet 22)

0 ½ 1 Mile

Scale 1:20000

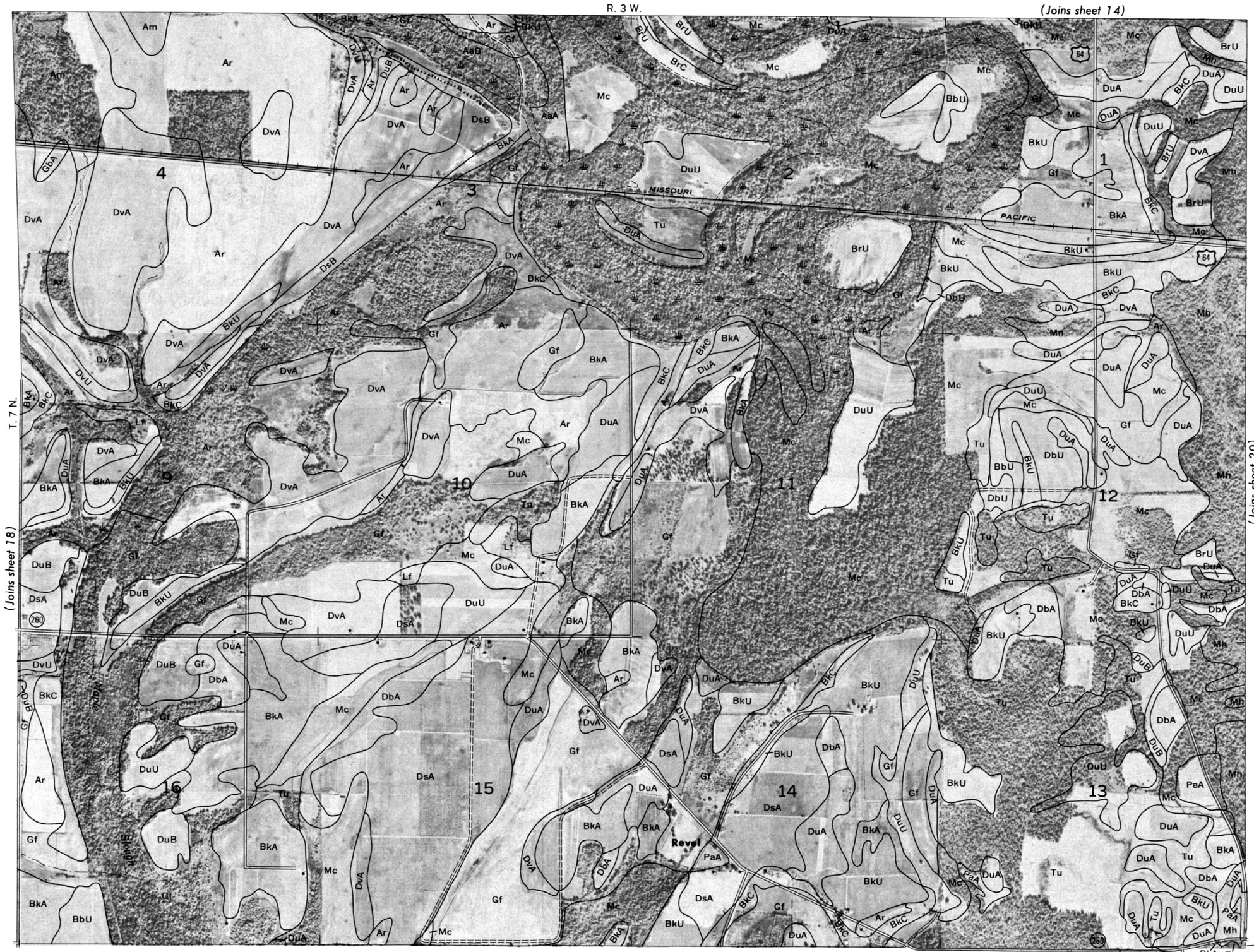
0 5000 Feet

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS — SHEET NUMBER 19



0 ½ 1 Mile Scale 1:20000 0 5000 Feet

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Land division corners are approximately positioned on this map.

WOODRUFF COUNTY, ARKANSAS NO. 19


(Joins sheet 15)
R. 2 W.
20
N
(Joins sheet 19)
(Joins sheet 21)
(Joins sheet 26)
T. 7 N.
MISSOURI PACIFIC
Patterson
McCRORY
RIVER
CACHE
Grays
6
5
4
3
7
8
9
10
18
17
16
15
64
17
260
DuA
DuB
BkU
BkC
BkA
DbA
DuU
DvA
DvU
Gf
Tu
Mc
Mh
Ar
BbU
BbC
Fo
Lf
DsA
SkA
Am
0
½
1 Mile
Scale 1:20000
0
5000 Feet

WOODRUFF COUNTY, ARKANSAS — SHEET NUMBER 21

WOODRUFF COUNTY, ARKANSAS NO. 21

R. 2 W. | R. 1 W.

(Joins sheet 16)

21

N

T. 7 N.

(Joins sheet 20)

(Joins sheet 22)

(Joins sheet 27)

MISSOURI PACIFIC

Possum Creek

HUFF CEMETERY

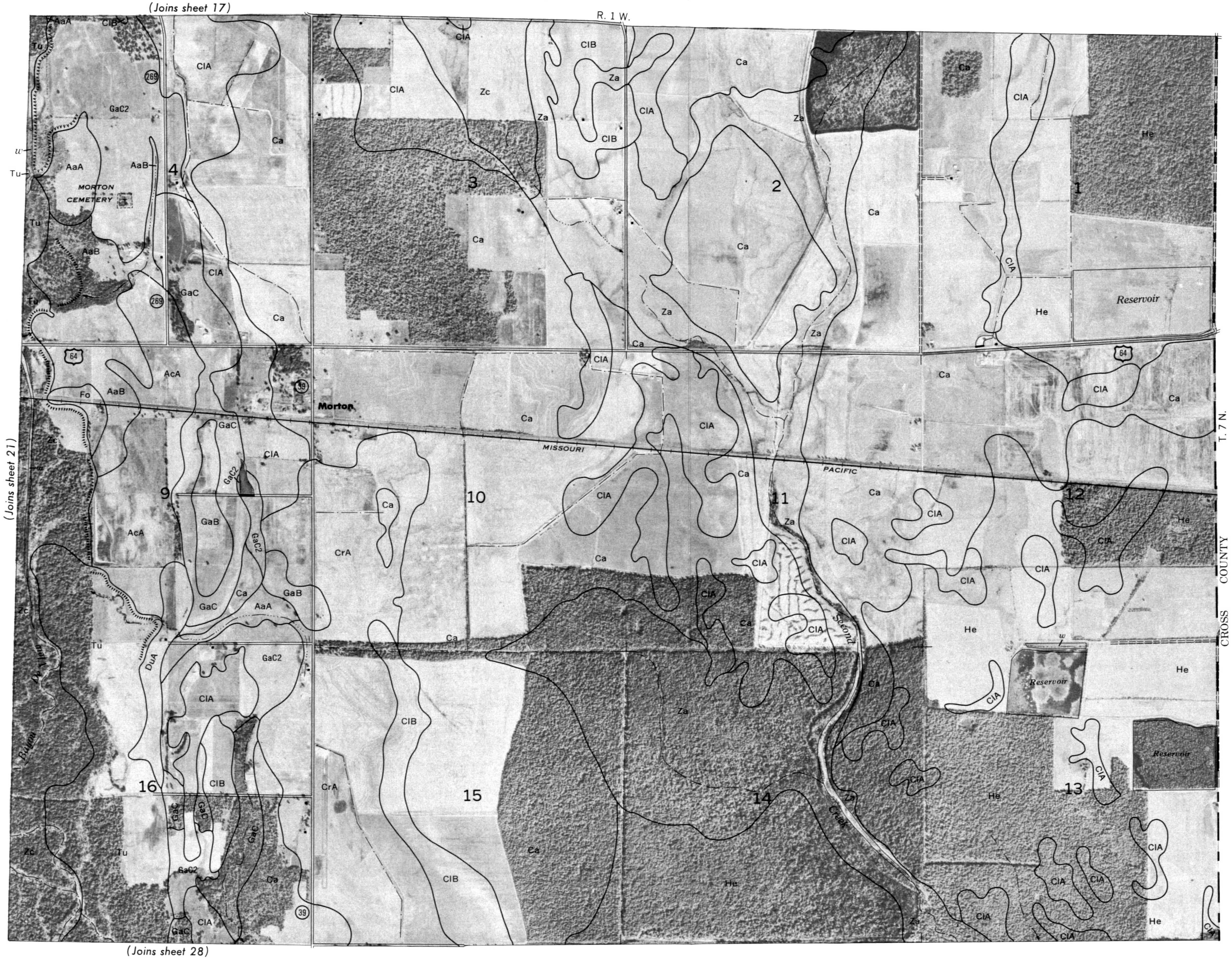
Good Hope Church

DE VALLS BLUFF

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet



0 ½ 1 Mile Scale 1:20000 0 5000 Feet

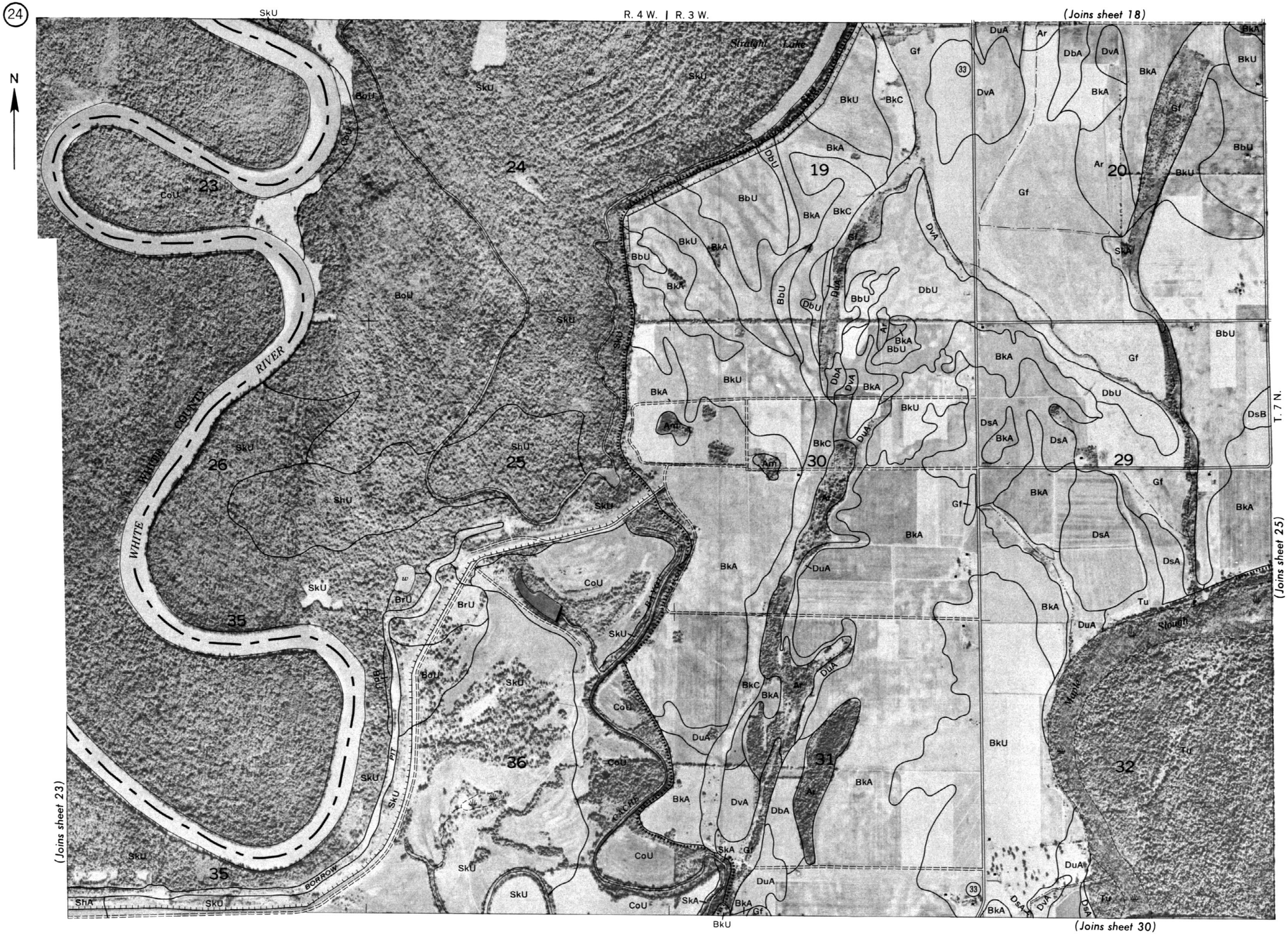
WOODRUFF COUNTY, ARKANSAS NO. 22

WOODRUFF COUNTY, ARKANSAS NO. 23

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet



0 ½ 1 Mile Scale 1:20000 0 5000 Feet


(Joins sheet 20)
R. 2 W.
(Joins sheet 25)
(Joins sheet 27)
(Joins sheet 32)
T. 7 N.
N
Grays
DeView
WOODMANS CEMETERY
ODD FELLOWS CEMETERY
Colona
CACHE RIVER
Miller
Branch
Fo
19
20
21
22
27
28
29
30
31
32
33
34
DuA
DuB
DuU
BkA
BkU
BkC
DbA
DvA
DvU
DsA
DsB
AaA
AaB
AcA
Am
Ar
Ca
CrA
Gf
GaB
GaC
GbA
Lf
Mc
Tu
BbC
BbU
ClA
Za
0
½
1 Mile
Scale 1:20000
0
5000 Feet

WOODRUFF COUNTY, ARKANSAS — SHEET NUMBER 27

WOODRUFF COUNTY, ARKANSAS NO. 27

(Joins sheet 22)

R. 1 W.

N

T. 7 N.

(Joins sheet 27)

(Joins sheet 34)

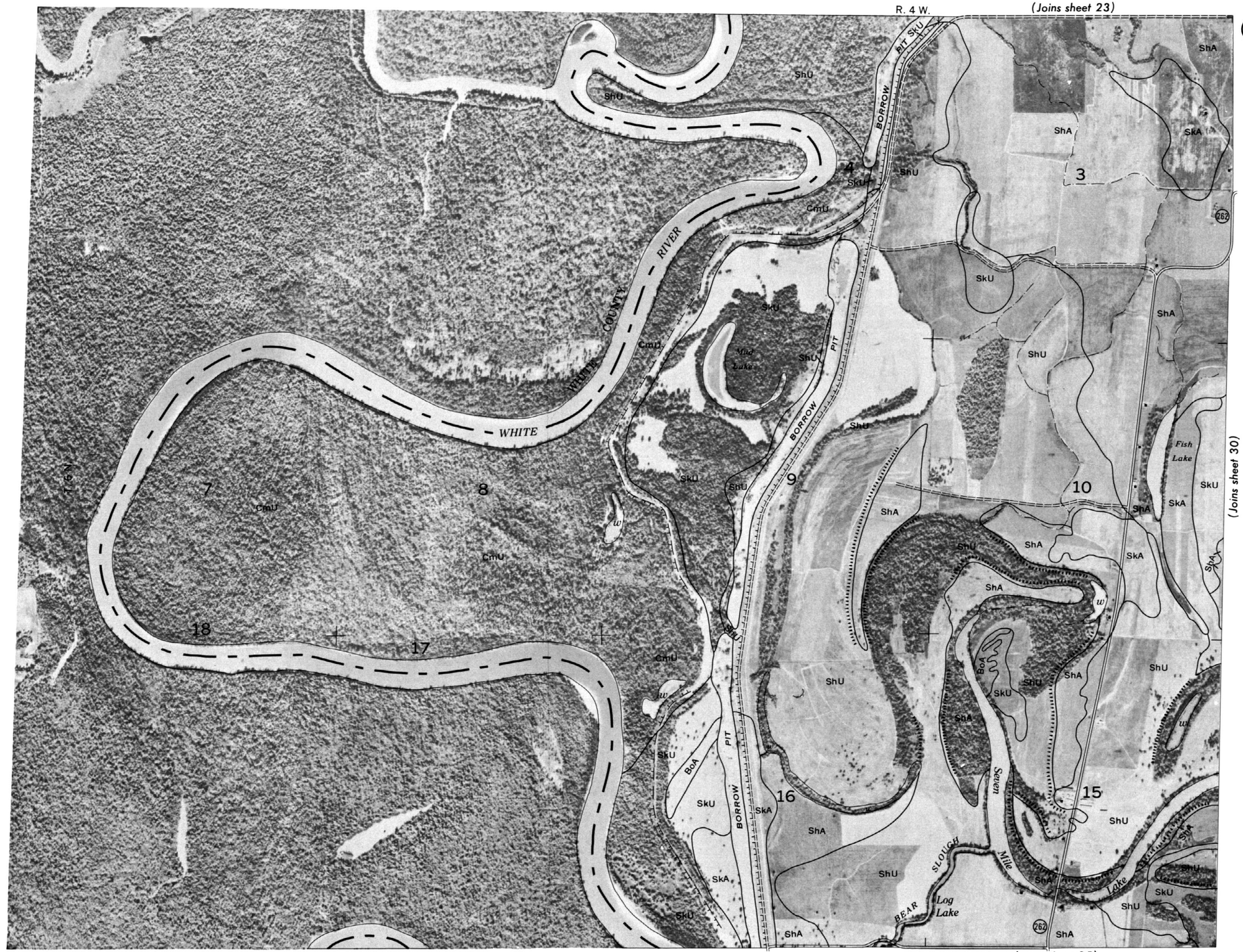
0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

CROSS COUNTY

WOODRUFF COUNTY, ARKANSAS NO. 28



R. 4 W. | R. 3 W.

(30)

N

(Joins sheet 24)

(Joins sheet 29)

(Joins sheet 36)

(Joins sheet 31)

T. 6 N.

Gregory

Maple Slough

Seven Mile Lake

CACHE Bayou

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS — SHEET NUMBER 31

R. 3 W.

(Joins sheet 25)

31

N

T. 6 N.

(Joins sheet 30)

(Joins sheet 32)

(Joins sheet 37)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO. 31

WOODRUFF COUNTY, ARKANSAS — SHEET NUMBER 32

(Joins sheet 26)

R. 2 W.

T. 6 N.

(Joins sheet 31)

(Joins sheet 33)

(Joins sheet 38)

32

N

Wiville

Pleasant Grove Church

Beard School

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO. 32

Scale 1:20000

5000 Feet

1 Mile

½

0

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Land division corners are approximately positioned on this map.

WOODRUFF COUNTY, ARKANSAS NO. 33

WOODRUFF COUNTY, ARKANSAS — SHEET NUMBER 34

(34)

N

(Joins sheet 28)

R. 1 W.

T. 6 N.

(Joins sheet 33)

(Joins sheet 40)

Bemis

Hillemann School

Reservoir

Southwestern

WOODRUFF COUNTY

CROSS COUNTY

ST FRANCIS COUNTY

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO.34

WOODRUFF COUNTY, ARKANSAS NO. 35

T. 6 N.

R. 4 W.

(Joins sheet 29)

(Joins sheet 36)

(Joins sheet 41)

35

N

WHITE RIVER

BORROW PIT

BEAR SLOUGH

Log Lake

McClelland

20 21 22 27 28 29 32 33 34

6

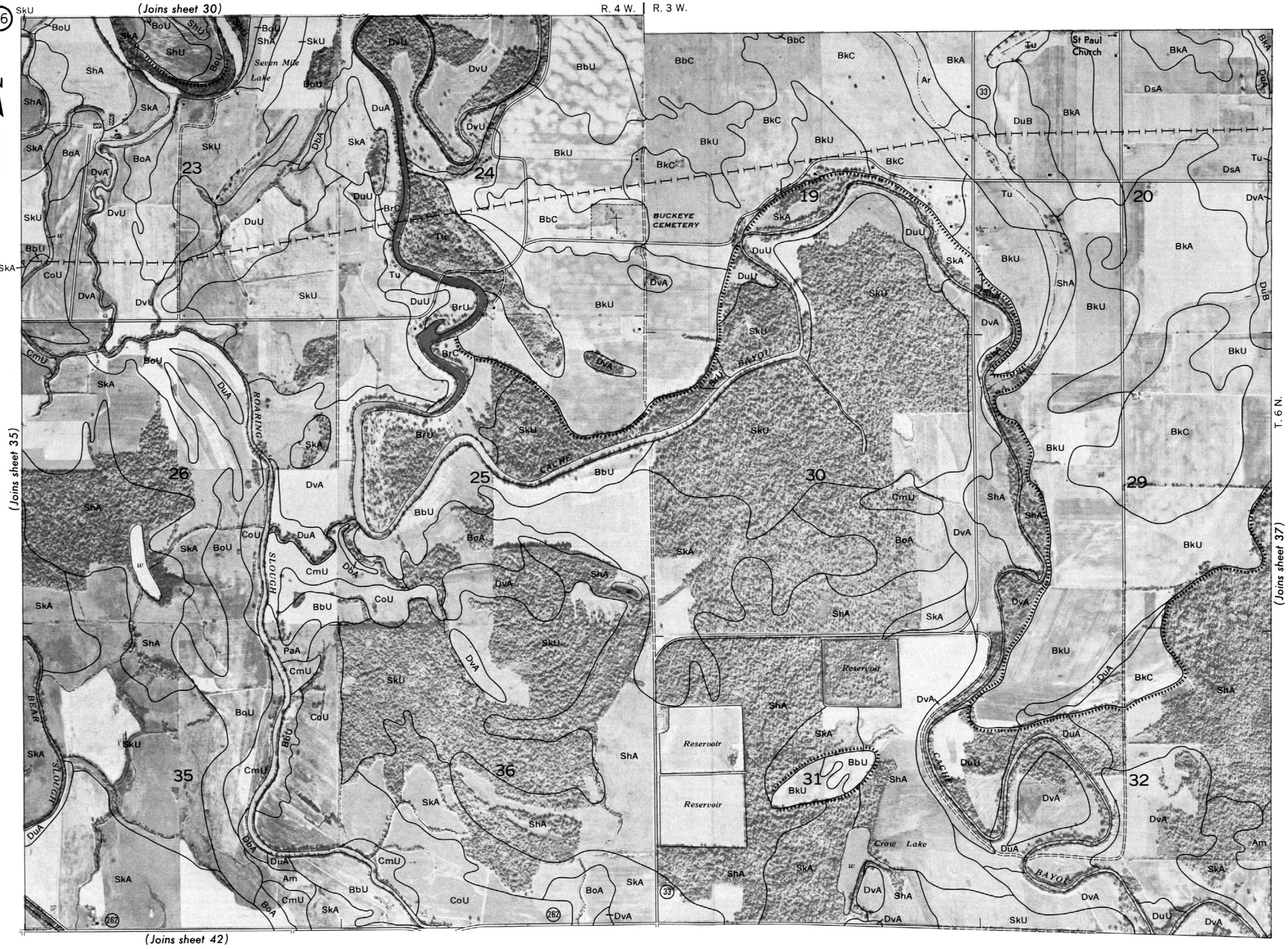
CmU SkA SkU ShA ShU BoA BbU CoU DuA DvA AaA Sm Mm

262

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet



WOODRUFF COUNTY, ARKANSAS NO.36

R. 3 W.

(Joins sheet 31)

37

N

T. 6 N.

(Joins sheet 36)

(Joins sheet 38)

(Joins sheet 43)

Pleasant Grove Church

RIVER

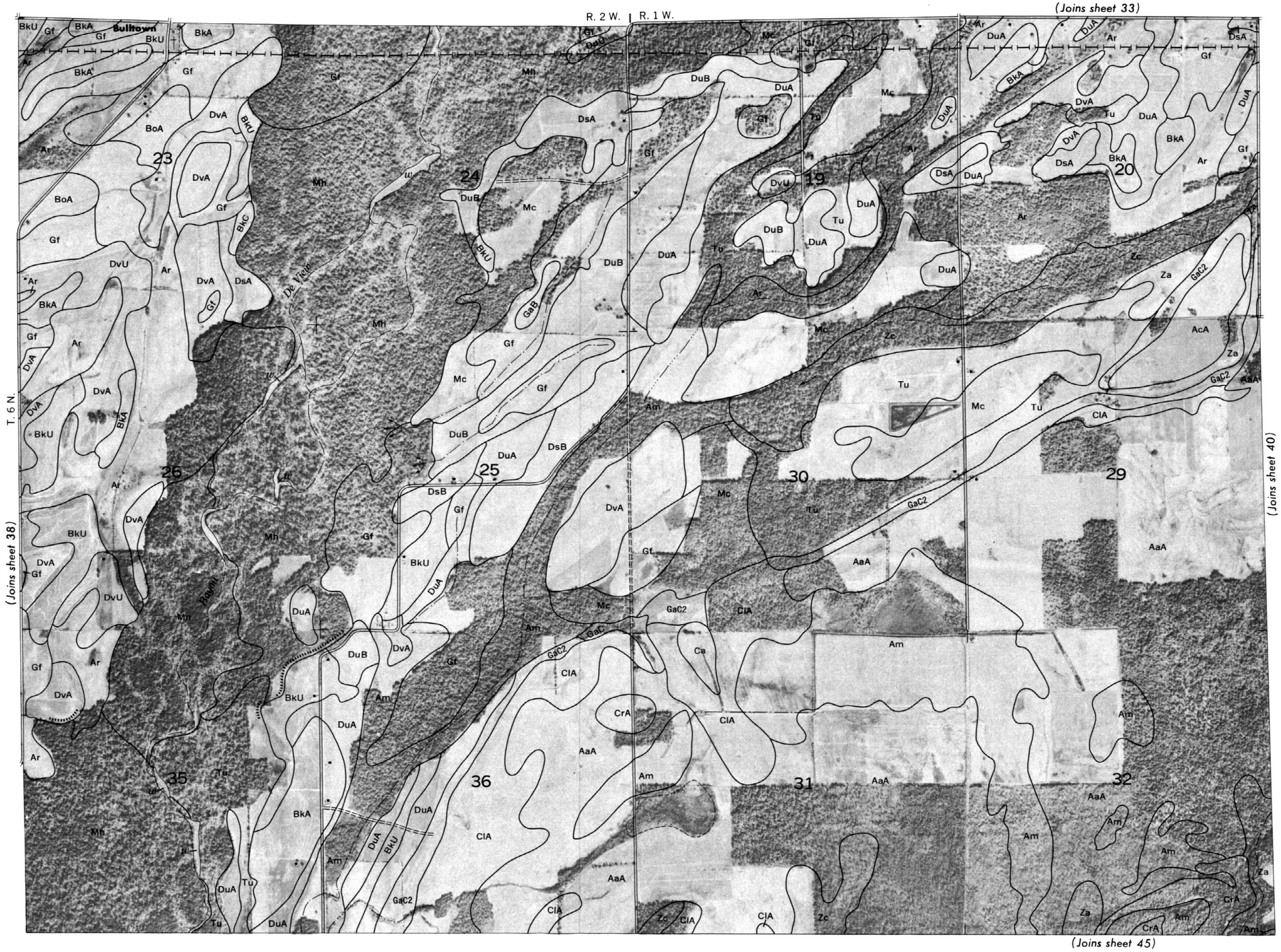
CYPRESS CREEK

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO.38



0 ½ 1 Mile Scale 1:20000 0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO.40

WOODRUFF COUNTY, ARKANSAS NO. 41

(Joins sheet 36)

R. 4 W. | R. 3 W.

42

N

Kramer

CmU SkA BoA DuA Am BoU CoU DvA ShA DuU DbA Fo BrU AcA

1 2 5 6 7 8 11 12 13 14 17 18

ROARING SLOUGH

CANAL

BEAR TOUGH

Dixie

T. 5 N.

(Joins sheet 41)

(Joins sheet 43)

(Joins sheet 47)

PRAIRIE COUNTY

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO. 43

R. 3 W.

(Joins sheet 37)

43

N

T. 5 N.

(Joins sheet 42)

(Joins sheet 44)

(Joins sheet 48)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet


(44)
(Joins sheet 38)
R. 2 W.
T. 5 N.
N
(Joins sheet 43)
(Joins sheet 45)
(Joins sheet 49)
Becton
Reservoir
Reservoir
Creek
Buffalo
Beaum
De View
0
½
1 Mile
Scale 1:20000
0
5000 Feet

WOODRUFF COUNTY, ARKANSAS NO. 45

R. 2 W. | R. 1 W.

T. 5 N.

(Joins sheet 39)

(Joins sheet 44)

(Joins sheet 46)

(Joins sheet 50)

45

N

Reservoir

Hunter

SOUTHWESTERN ST LOUIS

0 ½ 1 Mile

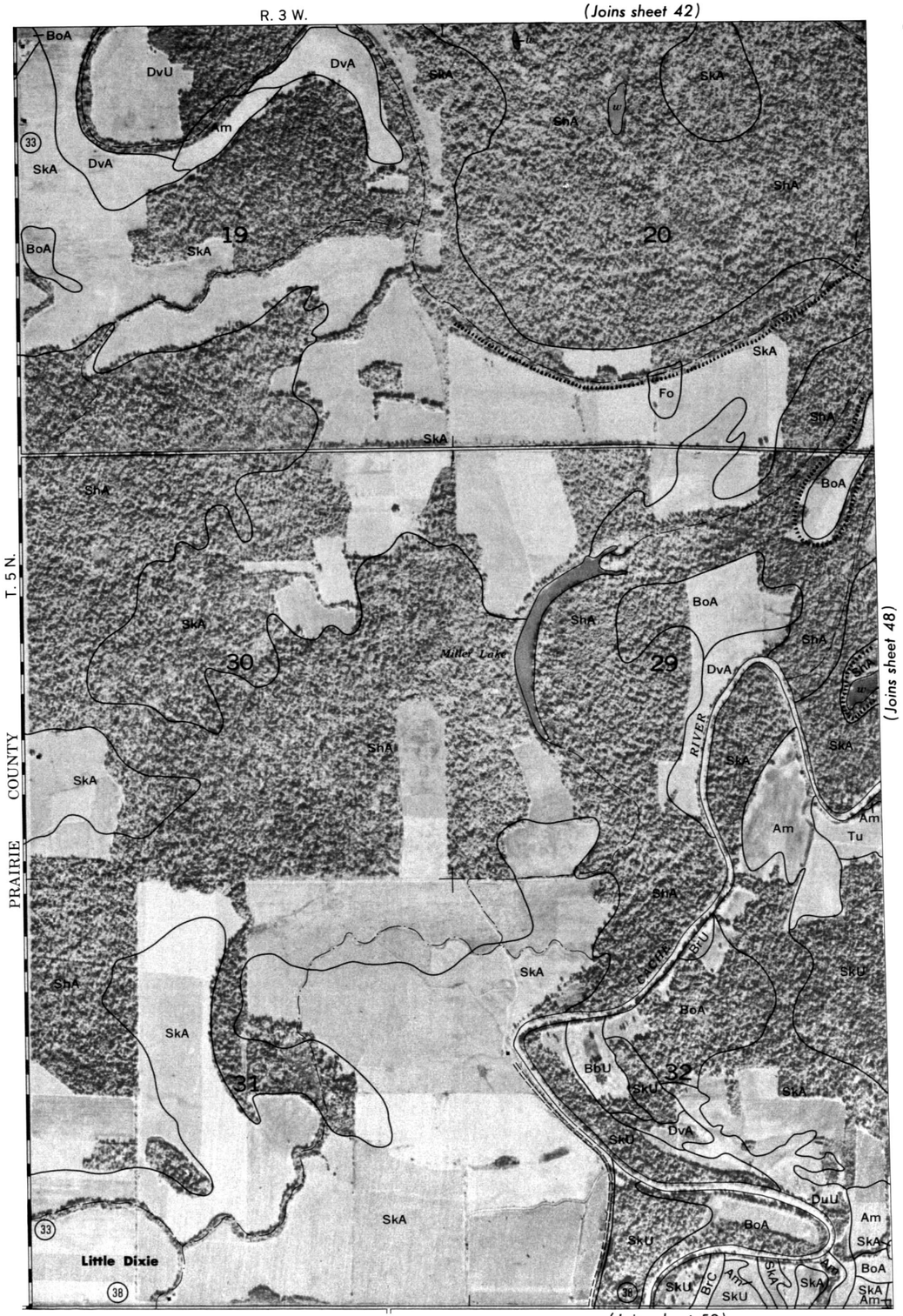
Scale 1:20000

0 5000 Feet


46
N
(Joins sheet 40)
(Joins sheet 45)
(Joins sheet 51)
R. 1 W.
T. 5 N.
ST FRANCIS COUNTY
WOODRUFF COUNTY, ARKANSAS NO.46
St Louis Southwestern Ry
Reservoir
Creek
Scale 1:20000
0
½
1 Mile
0
5000 Feet

This map is one of a set compiled in 1967 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the Arkansas Agricultural Experiment Station.
Land division corners are approximately positioned on this map.

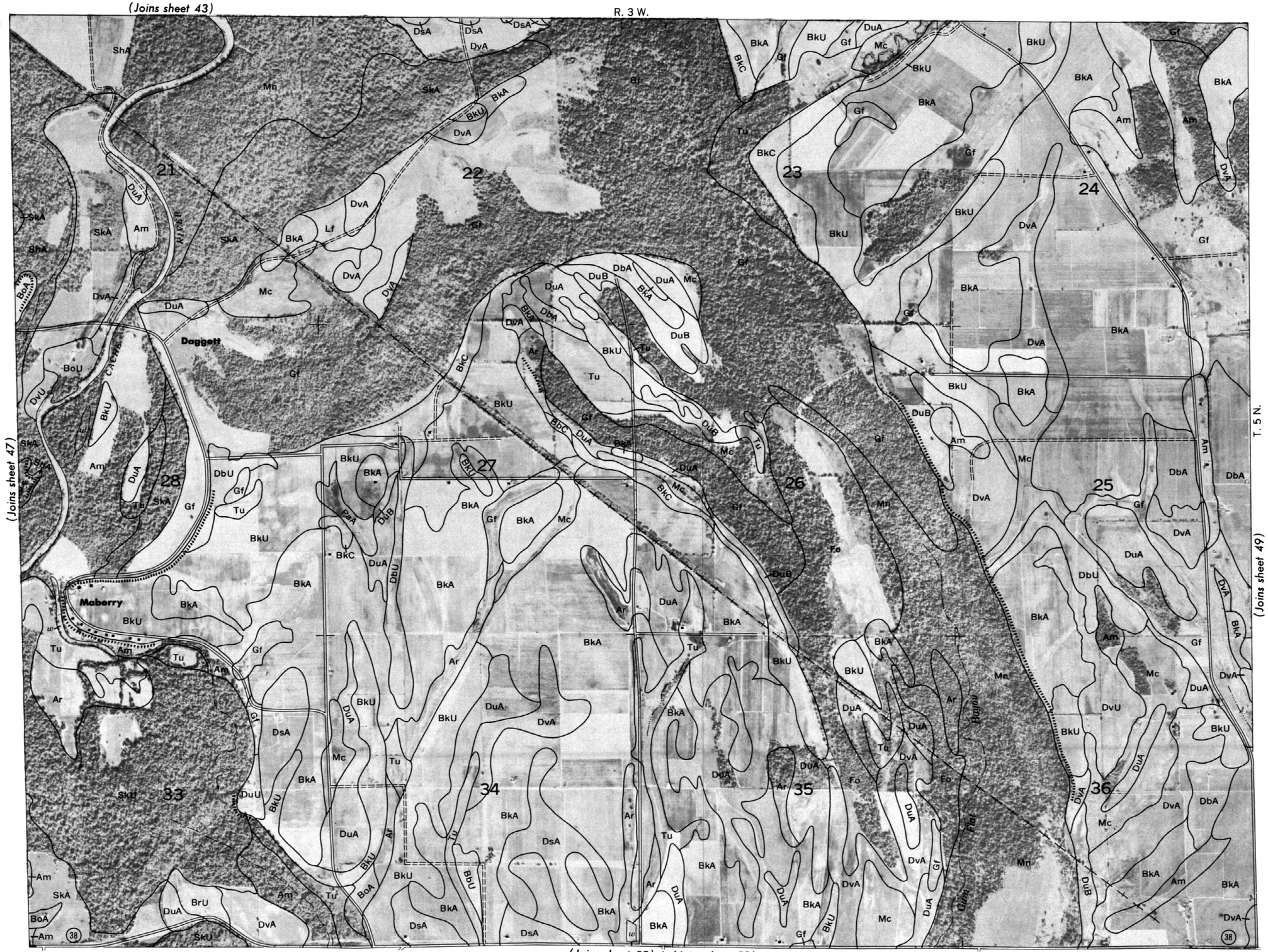
WOODRUFF COUNTY, ARKANSAS NO. 47

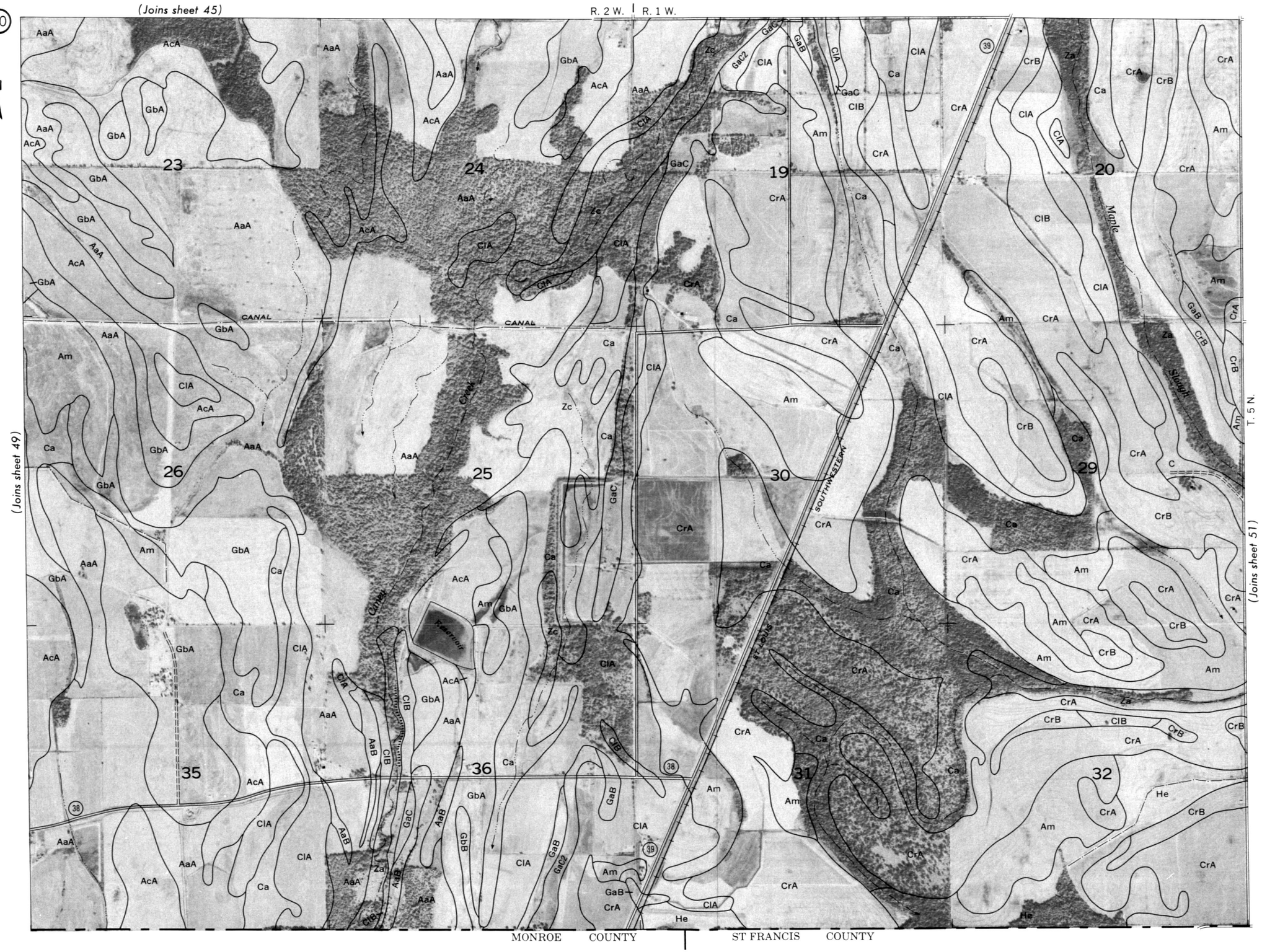


0 ½ 1 Mile

Scale 1:20000

0 5000 Feet


(Joins sheet 43)
R. 3 W.
T. 5 N.
N
(Joins sheet 47)
(Joins sheet 49)
(Joins sheet 52)
(Joins sheet 53)
Daggett
Maberry
Cache River
Bayou
21
22
23
24
25
26
27
28
33
34
35
36
38
0
½
1 Mile
Scale 1:20000
0
5000 Feet


(Joins sheet 45)
R. 2 W.
R. 1 W.
50
N
23
24
19
20
26
25
30
29
35
36
31
32
39
38
CANAL
Creek
Maple Slough
Reservoir
SOUTHWESTERN
St. Louis
(Joins sheet 49)
(Joins sheet 51)
T. 5 N.
MONROE COUNTY
ST FRANCIS COUNTY
0 ½ 1 Mile
Scale 1:20000
0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO. 51

R. 1 W.

(Joins sheet 46)

51

N

T. 5 N.

(Joins sheet 50)

COUNTY

ST FRANCIS

ST FRANCIS COUNTY

Reservoir

East Fork

Maple Slough

Pony Creek

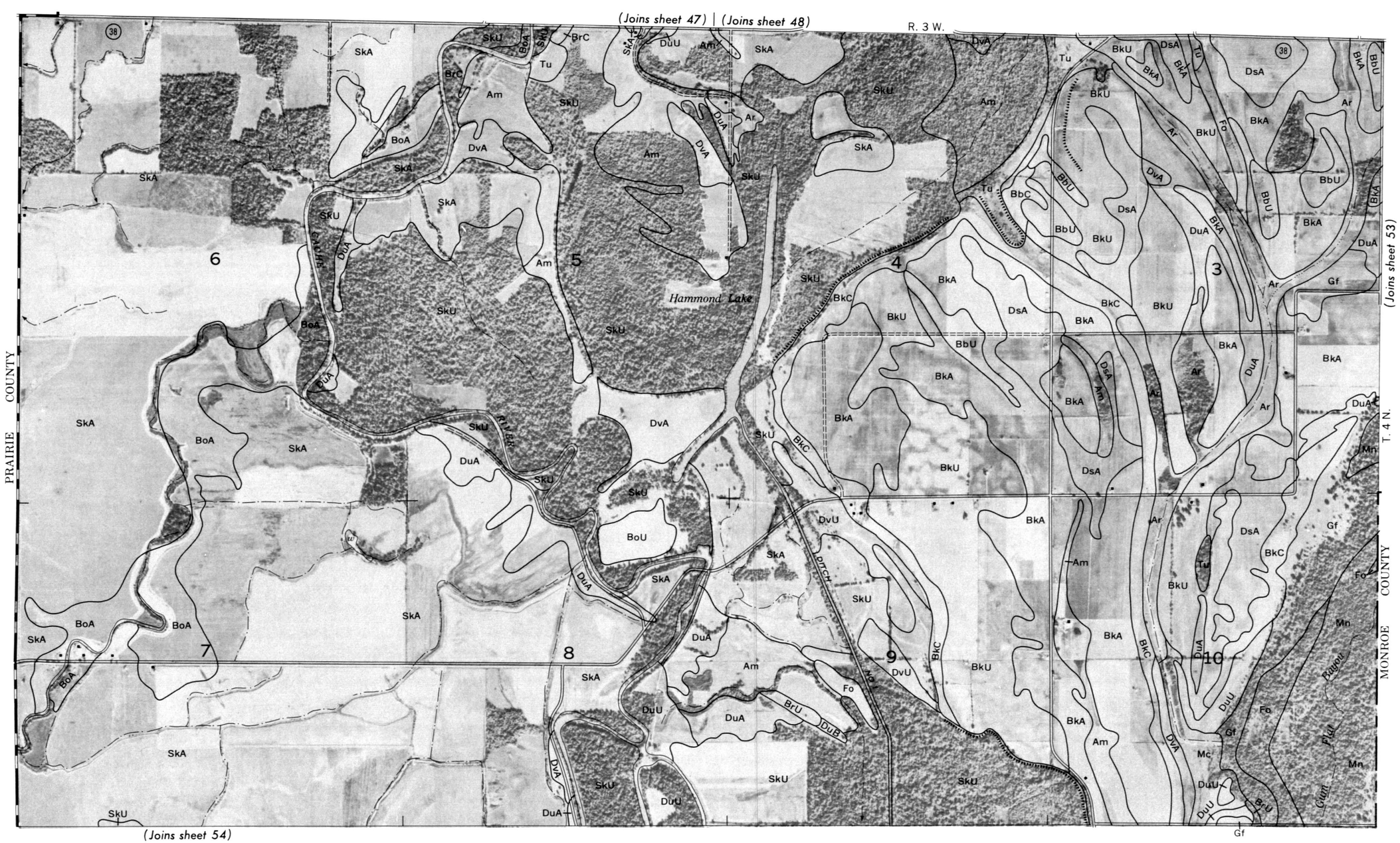
Flat Fork Creek

0 ½ 1 Mile

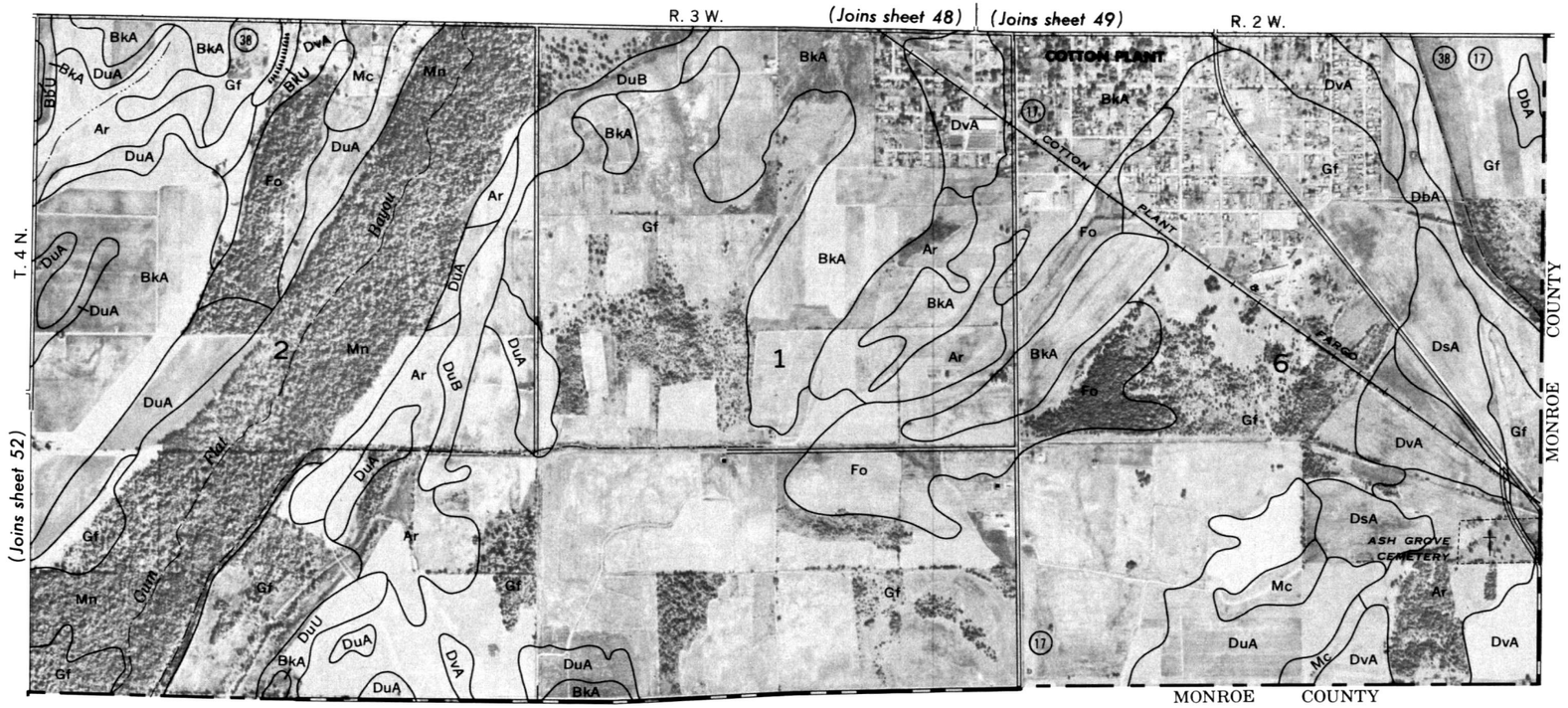
Scale 1:20000

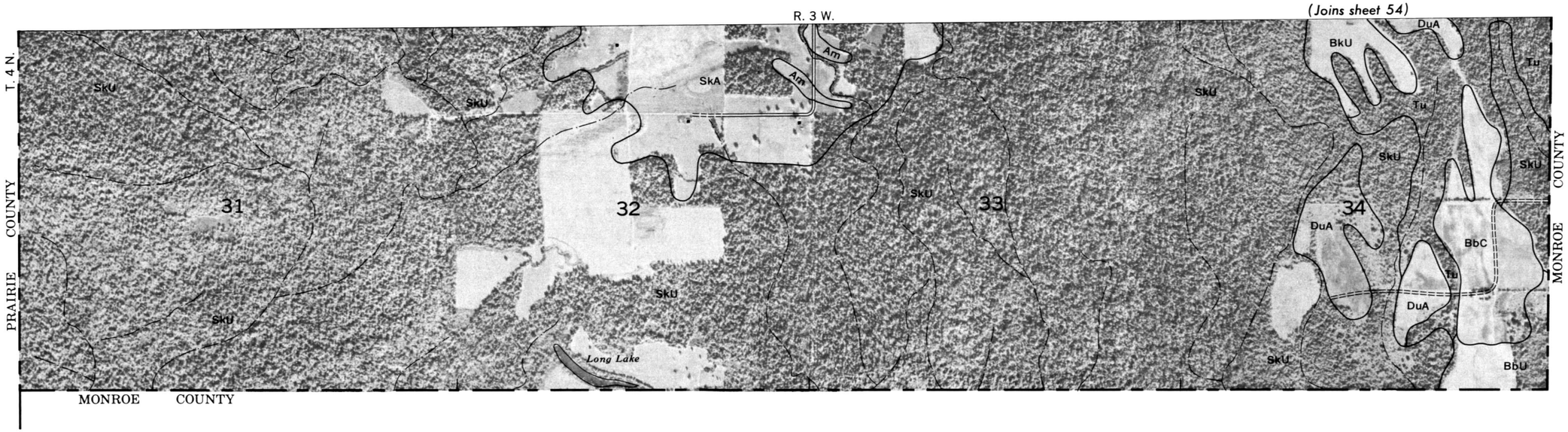
0 5000 Feet

(52)



WOODRUFF COUNTY, ARKANSAS NO.52





0 ½ 1 Mile Scale 1:20000 0 5,000 Feet

54

(Joins sheet 52)

R. 3 W.

T. 4 N.

N

PRAIRIE COUNTY

MONROE COUNTY

Little Buck Lake

Big Buck Lake

CACHE RIVER

DITCH NO. 1

Bayou

Flat

Crum

Mn

Fo

Gf

Lf

Ar

Mc

Tu

Am

BoA

SkA

SkU

DuA

DuB

DuU

DvA

BkA

BkC

BkU

DbA

DbU

BrU

18

17

16

15

19

20

21

22

30

29

28

27

(Joins inset, sheet 53)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WOODRUFF COUNTY, ARKANSAS NO.54